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How do we go from here?

The consumption of the car and the pursuit of a low carbon automobility

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How do we go from here? The consumption of the car and the pursuit of a low carbon automobility

Jonathan Edward Kershaw

PhD

October 2015



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Jonathan Edward Kershaw

A thesis submitted in partial fulfilment of the University's requirements for the degree of Doctor of Philosophy

October 2015

Abstract

Although the environmental imperative compels us to search for a low carbon system of mobility, contemporary society seemingly necessitates a low carbon *automobility*. The costs and impracticalities of low carbon vehicles are well documented, and although the cultural and semiotic nature of the car means that it has always been more than just a means of transport, less is known about how socio-cultural mores regarding the car might impact upon the transition to low carbon motoring.

Because cars carry people, then they inevitably carry experiences and meanings too. However, a shift from conventional internal combustion-engined vehicles to more low carbon forms of propulsion, such as electric or hybrid vehicles, suggests that the nature – *et ergo* our experiences and perceptions – of the car will necessarily change.

It is therefore desirable to investigate the contemporary ‘consumption’ of the car, not only as personal transport but also as status symbol, cultural artefact and experience, to assess how such a socio-cultural consumption might apply to low carbon vehicles and so ascertain the subsequent potential for a holistic low carbon automobility as part of a sustainable transport policy.

A suite of methods was employed to investigate if or how contemporary automobilities can aspire to a low carbon automobility, or whether the everyday socio-cultural ‘consumption’ of the car might preclude a transition to low carbon vehicles. The notions of affect and/or non-representational theory were appropriated as a philosophical framework to look beyond a seemingly default postmodern ‘car-as-representation’ approach to the consumption of the car and so begin to explore a deeper, perhaps even subconscious, regard for the car. In addition, opinion was sought from stakeholders within the low carbon vehicle sector as to the technologies within, the prospects for, and the efficacy of, UK low carbon vehicle policy and its facilitation thereon, and also with a sample of EV drivers as to their experiences of electric cars.

Responses to an initial online questionnaire appeared to deny any status or regard for the car beyond its utility. However, subsequent semi-structured interviews with

motorists conducted (mostly) in their cars contradicted these findings, with a variety of expressed feelings – pride, empowerment, fortune – suggesting a deeper, subconscious regard for, reading of, and connection with, the car than is immediately apparent. Similarly, the utility of the electric car was transcended, this time by feelings of ‘greenness’ and ‘calm’ expressed by EV drivers. A stated amenability and aspiration by those interviewed for low carbon vehicles contrasted with an aspiration for sporty and prestige cars, suggesting an ingrained or innate idea as to what constitutes a truly desirable car. The more cultural facets of the car explored during focus group discussions established a connection between a car’s cultural representation and its meaning.

Interviews with low carbon vehicle stakeholders suggest that while UK low carbon vehicle policy is broadly effective, is not as efficacious as it could be, in that itinerate market-led aspirations lack the fixity and certainty, in terms of both infrastructure and policy, that investors and consumers require, especially given a high entry price, the promise of lower running costs notwithstanding.

In establishing where ‘here’ is regarding the consumption of the car and the implementation of a low carbon vehicle policy, this research provides a new perspective upon the appetite and potential for a transition to a future low carbon automobility, and shows the efficacy of appropriating the notions of affect and non-representational theory to a more holistic consumption of the car.

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1. Introduction

“No other icon can match the car for showing the interrelationship of human and machine which has so dominated modern technological life because no other relationship is quite so ordinary and quite so intimate.”

(Samuels, 2002: 52).

This thesis is the result of two key interests in my life. Two interests that are seemingly at odds with each other, and are indeed in conflict, with one impacting greatly on the other and, despite the facility and convenience it offers, to the potential detriment of us all. They are the motor car and the environment.

The embodiment of modernity, the motor car or automobile has had a profound effect on us all – economically, physically, socially and emotionally. It has mobilised us, it has shrunk our world. Whether nationally or personally, it has bestowed a status and fostered prosperity. It has “transformed our everyday life and the environment in which we operate” (Wollen, 2002: 11).

It has been noted that the transport sector – the movement of goods and people by road, rail, air or sea – accounts for approximately 25% of anthropogenic carbon dioxide (CO₂) emissions (EC, 2011a; Khan Ribiero et al, 2007; Khare and Sharma, 2003). However, the fact that almost a half of these transport sector CO₂ emissions – up to 12% of overall anthropogenic CO₂ emissions – comes from the car alone (EC, 2011a; 2011b; EU,2006) would suggest that not only should we seek a low carbon mobility, but that we need to pursue a low carbon *automobility*.

Much of the academic discourse in this field has focussed upon reducing private car use or even getting people out of their cars altogether. However, it may not be enough to consider simply using cars less to reduce its environmental impact. The car isn’t going to go away any time soon. An innate utility means that it is too useful, too convenient for us to relinquish; for many, the car is also too desirable.

Because cars carry people they inevitably carry experiences and meanings as well, and the cultural and semiotic nature of the car means that it has always been more than just

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a means of transport. A sociology of the car would appear to be lacking (Hawkins, 1986; Maxwell, 2001; Merriman, 2009) however, and even though the costs and (im)practicalities of low carbon vehicles are well documented both academically and anecdotally, it seems little consideration is given to quotidian socio-cultural mores, knowledges and experiences relating to the car and how they might impact upon the transition to low carbon motoring.

A shift from conventional internal combustion-engined vehicles to more low carbon forms of propulsion such as electric or hybrid vehicles, suggests that the nature, and therefore the experience and perception, of the car will necessarily change. As such, this study posits the following research question:

Are existing automobilities a barrier or a lever to a low carbon automobility?

It is by considering the socio-cultural regard or ‘consumption’ of the motor car or automobile that we can assess the potential and appetite for a low carbon automobility, that is whether motorists are willing and able to embrace such a notion, or if the quotidian consumption of the car might preclude a transition to low carbon vehicles.

The issues which need to be assessed if we are to understand how motorists may want to adopt a low carbon automobility are those which pertain to existing automobility. After all, the extent to which low carbon vehicles fulfil extant automotive mores and peccadilloes may be moot if they aren’t practicable and/or affordable. To this end, there are three aims which together should answer the proposed research question, the first of which is:

- i) to examine the relationship between motorists and their cars – to enquire as to how the car is regarded culturally, to find out why people choose the car that they do and what they aspire to, to consider how people experience and ‘feel’ their cars, to identify the feelings and meanings people invest in their cars and see if and/or how those feelings and meanings may be transferred to low carbon vehicles.

It is in appropriating notions of affect and/or non-representational theory, that it will be possible to go beyond a seemingly default ‘car-as-representation’ approach to car

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consumption and, by considering an ‘automotive affectus’, we can begin to assess how a more holistic consumption of the car might effect a transition to a low carbon automobility. So as to understand the end to which this transition is intended, the second aim of this research is:

- ii) to examine the extent of knowledge about low carbon vehicle technologies and policies, and discover how the day to day experiences, feelings and (im)practicalities of low carbon vehicles with emergent technologies (e.g. electric vehicles or hybrids) may influence a wider acceptance.

Knowledges of low carbon vehicle technologies necessarily transcend those of propulsion hardware, pertaining also to notions of what constitutes a ‘green’ car, and are key to a low carbon vehicle uptake. Meanwhile, comparing the experiences and feelings of those who have driven electric cars to those of conventional car drivers can be useful in assessing the potential for a transition to a low carbon vehicle automobility.

While considering individual, personal feelings and knowledges surrounding extant and low carbon automobility, it is also important to assess stakeholder approaches and attitudes to the policies and practicalities concomitant with low carbon vehicles, in terms of both provision and negotiation, so as to see what is being currently being done to facilitate a low carbon automobility, namely:

- iii) to ascertain corporate and local authority stakeholder opinion on low carbon vehicles and on low carbon vehicle policy, what stakeholders themselves are doing to facilitate a low carbon automobility, how stakeholders judge the prospects of a low carbon automobility, the extent to which pecuniary measures may influence acceptance, and whether the low carbon vehicle ‘message’ is reaching motorists.

So can we perform ‘automobility’ better? In eulogising the Citroën DS, Roland Barthes noted in his *Mythologies* (1957 [1972]: 88) how “until now, the ultimate in cars belonged to the bestiary of power” – might a historical, perhaps even ingrained, admiration or aspiration for fast, powerful cars preclude the desiring of something more environmentally friendly? If so, can we cross this automotive Rubicon, and so facilitate a transition to low carbon vehicles? Do we even want to?

1. Introduction

This study is grounded in a wide ranging literature review (chapter 2) which initially explores a sociology of the car and its place not only in society, but also in culture, and how subsequent automotive meanings are contested and negotiated. The environmental impacts of the car and the low carbon technologies which may ameliorate these impacts are also assessed, as are the pecuniary implications concomitant with a low carbon automobility. My epistemological approach appropriating postmodernism, affect and non-representational theory is then explained (chapter 3), as are the methods used in the collection of data (chapter 4).

The analysis of the data collected is split into two chapters – ‘Low carbon vehicles: the here and now’ and ‘Automotive for the people’. The former (chapter 5) details low carbon vehicle knowledges and opinion from both motorists and stakeholders, and considers what this might mean for low carbon automobility now and in the future. The latter (chapter 6), meanwhile explores the affectual, representational and non-representational aspects of contemporary automotive mores and experiences, and how such mores and experiences might be transferred to low carbon vehicles.

As noted above, a comparative contemporary dearth of academic research has meant that the sociology of the car has been lacking, let alone in an environmental context. While also considering the technologies and (im)practicalities of low carbon vehicles, this innovative study goes beyond these, appropriating the concepts of affect and non-representational theory to consider the contemporary consumption or regard of the car as avatar, icon, artefact and experience at an ‘essential’ level – in both a human and an automotive sense – and what impact this may have upon an uptake of low carbon vehicles.

And so try to ascertain how, given the nature of the recognition of the impacts of our activities and the need to act – the environmental imperative – we might go from ‘here’.

2. Literature review

2.1 Introduction

While an environmental and/or geopolitical imperative compels us to search for a low carbon system of mobility, contemporary society – whether by dint of convenience, desire or status – seemingly necessitates a low carbon *automobility*. However, while issues concerning the costs and practical limitations of contemporary low carbon vehicles are well documented in both academia and the media, less is known about how socio-cultural regard for the car might impact upon the potential for low carbon motoring. The cultural and semiotic nature of the car means that it has always been more than simply a means of transport and, as such, it is important to assess the responsiveness to, and the appetite for, a greener automobility if we are to ascertain the viability of sustainable personal mobility.

It is appropriate, then, to investigate the contemporary consumption of the car, not only as personal transport but also as status symbol, socio-cultural icon and experience, and to subsequently try to assess how such consumption might apply to low carbon vehicles so as to ascertain the subsequent potential for a low carbon automobility as part of a holistic sustainable transport policy. The reason for this is that in trying to understand how motorists may want to change to, and adapt to, a low carbon automobility of their own volition, without coercion or the threat of environmental catastrophe, it is appropriate to highlight how the emotive, semiotic, societal and sensory consumption of the car affects and influences quotidian use of the car, and so establish how a sense of the rationale and knowledges associated with existing car consumption might be performed within the frame of a ‘green’ car consumption.

To try and understand how motorists may want to adopt a low carbon automobility, there are three aspects of automobility which would be useful to address if we are to indeed ascertain how we go from here. Firstly, we need to consider how the motor car is consumed culturally – that is, the products, ideas, customs and behaviours (OED, 2015) concomitant with automobility; how the car is regarded, experienced and aspired to, and to the sources of knowledges that foster such regard, experiences and aspirations. There are the feelings and meanings which people invest in their cars, by

2. Literature review

which people construct narratives or stories about any relationships between them and their cars. Such narratives are informed by automotive experiences, such as the quotidian practices of driving, the impact of their surroundings both inside and outside their car, and the sensations of noise and movement while driving. In addition, there are external cultural influences which make persuasions as to choice and opinion. By establishing contemporary automotive feelings, meanings, experiences and aspirations, it may be possible to begin to assess how everyday automotive feelings, meanings and aspirations may be subsequently transferred to low carbon vehicles.

Secondly, it is important to consider the environmental impacts of automobility and to look at the various emergent low carbon vehicle technologies, such as hybrids or electric vehicles, to examine how the day to day practicalities and shortcomings of such technologies may act as barriers – or even opportunities – to a wider acceptance. For example, just as it can be argued that wind power isn't *the* answer, but *an* answer, to reducing carbon emissions from electricity generation, it can also be argued that the electric car is merely *an* answer to reducing carbon emissions from transport. Each low carbon technology has a place and is possessed of its own benefits and shortcomings. For example, while the electric car may be desirable in urban settings as it has no tailpipe emissions, there are issues with range and recharge time and infrastructure, whereas there are debates surrounding the costs and environmental impacts of hydrogen fuel cell technology.

Thirdly, the extent to which government policies such as cost/tax incentives and infrastructure provision may influence acceptance, and not just among early adopters of emergent technologies, warrants investigation. There are various fiscal inducements, such as the UK Government's scrappage scheme of 2010 and the more recent 'Plug-in' EV grant, the London congestion charge, and a variety of vehicle excise duty (VED) bands based on CO₂ emissions, to encourage the uptake of lower carbon vehicles and it is apposite to see just how these may, or may not, incentivise the motoring public.

In addressing these three issues, this literature review will define the nature of automobility before moving on to consider a sociology of the car, in terms of its (re)presentation, its meaning and its nature, and of how these aspects may be constructed and negotiated. The environmental impacts of the car are discussed, as are

2. Literature review

the various low carbon vehicle technologies and the pecuniary levers and barriers associated with low carbon vehicles.

In finding out how we go from here, it is important to know where ‘here’ is. For the purposes of this study, there are several aspects and places that ‘here’ pertains. ‘Here’ is the latest automotive propulsion technology, whether this technology is electric, hybrid or an internal combustion engine with the latest low-carbon fixes and fuels, and the associated (im)practicalities of these technologies; ‘here’ is the comparatively high cost of this low carbon technology which may well decrease over time; ‘here’ is what we know about the environmental impact of motoring and what we are prepared to do (and to pay) to mitigate and/or ameliorate it; and ‘here’ is the contemporary consumption of the car, that is how we view, regard and experience the car today, both socially or culturally, and not only how and why we use it. This final part of ‘here’ is particularly important, as it by assessing the social, cultural and experiential aspects of the car as a means to appraise a holistic consumption of the car, framed within an environmental context, it may be possible to reconcile the irrationality of car consumption with the rationality demanded by the environmental imperative, and so provide a new perspective upon the appetite and potential for low carbon automobility. Doing so will help define the place of the car within a sustainable transport paradigm located in the current economic and societal *zeitgeist*, which seemingly demands an increased individual automobility.

This literature review initially considers what constitutes ‘automobility’ before exploring what might comprise a sociology and consumption of the car and, by musing upon the place of the car in culture, how the knowledges concomitant with such a socio-cultural consumption may be acquired. In contemplating the pursuit of a greener automobility, the environmental impact of the car is assessed along with the various low carbon technologies that may propel us there. Finally, the review looks at the policy and pecuniary side to low carbon vehicles.

2.2 What is automobility?

A simple answer as to what is meant by the term ‘automobility’ is that it is “the paradigm of human movement built around petroleum-fuelled cars” (Goodwin, 2010: 60). While this may be true at the moment, new technologies notwithstanding, it is

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perhaps rather too prosaic a definition, with automobility best explained as a concept which is made up of several elements. On a wider level, it is defined as fundamental to the organisation of modernity (Böhm *et al*, 2006), which can also be said to be crucial to the consumption of postmodernity (see 2.3 and 3.2). It is the modus of the use and regulation of the car (*ibid*); it is the embodiment of freedom, individuality, mobility, cultural and societal progress, and provides a means of experiencing our surroundings (*ibid*) and, by dint of a time-space compression (Harvey, 1990), the potential to experience more of them more often.

Perhaps the definitive answer for a definition of automobility comes from Urry (2004), who ascribes six key terms and elements which pertain to the concept of automobility:

- a) “*manufactured object*” (Urry, 2004: 25 – original emphasis) – key to 20th century industrialisation and capitalism (and is still so in the 21st century), and which begat the notions of Fordism and post-Fordism
- b) “*individual consumption*” (*ibid*: 26) – significant in terms of personal consumption, not only for the necessary financial investment, but also in terms of the resultant semiotics provided by its acquisition
- c) “*complex*” (*ibid*) – inherently connected to many aspects of contemporary life for itself, for example with respect to sale, servicing, fuel and infrastructure, and in influencing planning, leisure and advertising activities
- d) “*mobility*” (*ibid*) – the seemingly default mode of transport, although the opportunities it affords are tempered with the restrictions inherent in its adoption
- e) “*culture*” (*ibid*) – an aspirational prerequisite for full participation in contemporary society, whether in terms of mobility or of cultural participation
- f) “*environmental resource-use*” (*ibid*) – possessed of huge environmental impact, in terms of both its use (infrastructure, emissions) and of resource use (metal extraction and fossil fuels, the dependence upon which is a likely source of international conflict).

The challenges presented by climate change, coupled with the fact that automobility is a key source of carbon emissions and other environmental impacts (Goodwin, 2010), means that studying and understanding ‘automobility’ is crucial. This is not only because of the quotidian ubiquity of the car (Sheller, 2007), but also the fact that,

whether by dint of its manufacture, ownership and/or use, the car impacts on all of us, whether we actively participate in automobility or not (*ibid*). The fact that car production and road networks were key to development in the 20th century (Dalby, 2007) means that studying the car is vital, not only because of this societal and economic development but also because of the way that use of the internal combustion engine threatens to alter atmospheric composition which, in turn, will impact upon humanity (*ibid*).

2.3 Carrying more than people – the car and sociology

Despite the cultural and environmental impact of the car upon society, there is a dearth of study pertaining to the sociology of the car. Sociological neglect of the car was noted by Hawkins (1986), and is seemingly still the case (Merriman, 2009; Steg, 2005; Dant, 2004), especially with regard to low carbon vehicles (Schuitema *et al*, 2013), with Gunn noting that much of the work that does exist “lacks temporal depth or historicity” (2013: 222), an aspect key to establishing where and what ‘here’ is with regard to contemporary automobility. This is surprising given that the consumption of the car, whether in terms of manufacture, ownership or use, has an impact upon everybody (Sheller, 2007). The reasoning behind this lack of sociological study isn’t clear, but it may be a result of an early ‘pastoral’ sociology during the early 20th Century which demonised the car as part of the urbanised threat to rural values and critiqued it accordingly (Hawkins, 1986). Such demonization wasn’t entirely without foundation; for example, Sachs notes how “[c]urses and shaking fists, flying stones, journalistic libel, and attempted acts of parliament accompanied the motorcar all the way through the first decade of [the 20th] century” (Sachs, 1992: 12) in Germany, while a more contemporary American account observed that “automobiles were barred from the boulevards of our cities as a menace to life and limb” (Zierer, 1922: 191) during the early 1900s.

However, the observation that “a possible reason for sociological inattention is that the automobile has not produced any cultural change” (Hawkins. 1986: 72), followed by the assertion that “it appears that the train, but not the car, helped generate change which had an impact upon cultural patterns” (*ibid*: 73) is, on the face of it, perplexing. Hawkins justifies this last statement by citing the standardisation of time necessary for railway timetables to be viable, which indeed represents a cultural change of sorts, but

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his suggestion that the car hasn't provoked any cultural change suggests that by the time it was deemed worthy of sociological study, the car was commonplace. Hawkins' observation can only be credible if we adopt the view that, when it was made, the perceived lack of 'cultural change' was due to the time of the automobile revolution and 'motoring for the masses' having long since passed, with any 'revolution' proffered by 'the car' having been effected by individual landmark cars such as the Volkswagen Beetle, the Fiat Nuova Cinquecento and the BMC Mini – cars borne of fuel crises or motoring for the masses – decades earlier. (Incidentally, all these cars have been re-engineered and re-imagined for the 21st century, and so are possessed of a very different nature or essence than before). It can be suggested that as far as sociological study of the car was concerned, it wasn't so much a case of 'familiarity breeds contempt' rather that contempt preceded familiarity and *then* bred intellectual and/or academic contempt, at least until more recently (e.g. Merriman, 2009; Edensor, 2004; Sheller, 2004).

Yet understanding the societal and cultural consumption of the car is crucial. Roland Barthes felt that "cars today are almost the exact equivalent of the great Gothic cathedral: I mean the supreme creation of an era, conceived with passion by unknown artists, and consumed in image if not in usage by a whole population which appropriates them as a purely magical object" (1957 [1972]: 88), while Bayley notes that "more than any other manufactured product, the car enshrines and projects the values of the culture that created it" (1986: 101), a notion that can be applied in terms of both manufactured object and cultural artefact (Gartman, 2004). In addition, it is multifarious societal and cultural mores (Edensor, 2004; Miller, 2001), the consumption alluded to by Barthes, above, that will compel one person to choose and to drive an economical supermini or B-segment vehicle and another to feel they must simply own a gas-guzzling four-wheel-drive sports utility vehicle, and will also inform and influence how people choose one make or brand of car over another; indeed, such socio-cultural mores have necessarily influenced the somewhat postmodern re-engineering and re-imagining (see Foster, 1984) of the Beetle, Cinquecento and Mini noted above. It is therefore vital to assess the socio-cultural consumption of the car, as it is this sociology which plays a part in explaining how consumers of the car directly impact upon the environment.

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The classic Bruntland definition of sustainable development is of development which “meets the needs of the present without compromising the ability of the future generations to meet their own needs” (WCED, 1987:8). However, a problem for this classic definition of sustainability, appropriated for our purposes to the concept of sustainable transport, is the conflict between society as citizens and society as consumers (Gabriel and Lang, 2006), whereby citizens face the moral implications and values of their choices whereas consumers tend not to be encumbered by such obligations and so act only for themselves (*ibid.*). For example, it is suggested that, for our purposes, citizens would eschew traditional, almost ingrained, automotive notions concomitant with Barthes’ “bestiary of power” (1957 [1972]: 88) and instead consider any environmental and sustainability implications of choosing a car (perhaps even by choosing not to have a car at all!), whereas consumers would simply choose the car they want to satisfy their needs.

This is because the consumption of the car, a seemingly default mobility option, is not simply rational; the car is a culturally dynamic artefact that not only fulfils “instrumental factors ... such as speed, flexibility and convenience” (Steg, 2005: 148), but also “symbolic and affective functions” (*ibid.*). That the consumption of the car can be “aesthetic, emotional and sensory” (Sheller, 2004: 222) suggests that there is a benefit concomitant with car use that lies in the semiotic and the emotional and not just in the instrumental (Steg, 2005). While the car has long been a status symbol, the notion of “Jonesmanship” (Setright, 2003: 105) changed in the US in the late 1950s, in that motorists “no longer spoke merely of *status*; each now cultivated his image” (*ibid.* – original emphasis). This mood was one which was swiftly copied in the UK too (*ibid.*), implying that the car then became even more than a status symbol, let alone mere transport. The car carries meanings as much as it carries people (Gabriel and Lang, 2006) and, just as the clothes we wear are indicative of our natures, interests and tastes, so it can be suggested that our cars are the clothes that we wear on the road (Kershaw, 2006) – “the ultimate expression of personal apparel” (Nieuwenhuis, 2008: 652) – and the way in which drivers wear their ‘clothes’, such as the condition of their car, any adornments to it, or the way it is driven, can be similarly indicative (Kershaw, 2006); indeed, to pick up on the observations of Bangle, below (TED, 2007), such clothing becomes an avatar.

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It is in assessing the way in which these ‘clothes’ are ‘worn’ on the road, by which the car becomes an avatar, that we need to go beyond the default, somewhat postmodern, way of assessing car consumption, that of the car-as-representation. We therefore need to look at how we might present these representations (McCormack, 2003) (see 3.4). How such meanings and performances might be assigned to, and performed in, low carbon vehicles is of interest, especially given the irrationality of existing car consumption observed by Sheller (2004), and given an inherent rationality to low carbon vehicles, however they are powered. For example, given the potential for sensory deprivation in terms of the isolation of noise (in the case of purely electric vehicles) and of feeling as cars become less mechanical and more electrified – for example in electric power steering which is increasingly commonplace – might an over-arching environmental rationality or instrumentalism displace the semiotic and the affectual in our cars? Might electric cars, for example, be regarded as mere appliances?

Another issue to bear in mind concerning the irrationality of car consumption is the paradigm of the *Other* (Sarup, 1996). It is suggested that the concept of the *Other* is rooted in Saussure’s observation of the negative oppositionality of signs (Chandler, 2007), since “[w]hat characterises each most exactly is being whatever the others are not” (Saussure, 1983 [1916]: 115, in Chandler, 2007: 21). This means that the car, and how it is driven, can be as indicative of what we’re *not* as much as what we *are* i.e. what a low carbon vehicle might say about us or not, especially so early in the scheme of things. For example, Lane suggests that although “any car can have a symbolic value ... symbolism is particularly strong for vehicles that use new types of technology” (Lane, 2011: 27).

Even if we only consider some of the aspects of automobility highlighted by Urry (2004), it should be clear that the car is more than just a means of mobility. The car has been cited as an example of a product to which society has “almost completely adjusted” (Kronenberg, 2007: 560), by which he claims that the greatest environmental impact of the car is not as a result of its use (or its overuse), but of the cultural and infrastructural changes it has wrought. This observation supports that of Beckmann, who says that the car has “changed the ‘lived’ spaces ... of human activity” (2001: 597) and spurred the growth of suburbia. This suburban growth illustrates the autopoietic nature of the car (Urry, 2004), by way of laying down the basis for its continuing

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expansion, encompassing automotive architecture such as roads, signs, refuelling infrastructure and the car itself (*ibid.*). Indeed, it was noticed in the earlier days of motoring that “the automobile is a ‘builder of good roads’” (Zierer, 1922), and the autopoiesis of the car has been noted more recently by manufacturers such as BMW, who suggest that not only has the car met the demands of our fragmented late-postmodern lifestyles, but has also propelled them (Benson *et al*, 2007). As motorists, as a society, we have become conditioned to the car.

This autopoiesis has bequeathed a legacy of highways on which to use cars, and yet while they facilitate mobility, Merriman describes how social scientists refer to modern highways as ‘non-spaces’, in that they are “blank, generic, placeless spaces of detachment and solitariness” (2009: 589). Such locations can be described as spaces in which we go merely ‘to do’, and not ‘to be’; where we do not necessarily want to linger, but to simply complete the task in hand as quickly as possible and thereby progress to our subsequent destination. Indeed, Augé describes how non-places “are there to be passed through” (Augé, 2008: 83).

It may be correct to express such sentiments about motorways, but what about the means by which motorists traverse these spaces – their cars? Can it be said that the emotions invested in cars have the potential to turn such ‘non-spaces’ into ‘spaces’? Is it fair to suggest that their maturity (Bayley, 1996) means that many modern cars can be classed as non-spaces themselves? If so, this may help to identify how people imbue their cars with an intangible quality that elevates them above the status of mere machines or simple modes of transport. Traversing highway ‘non-spaces’ implies that one reason why the car is important as a signifier is because the “paradox of car culture” (Graves-Brown, 1997: 71), in that while the car promises us “freedom, mobility and sexuality” (*ibid*), the privatisation that it affords actually isolates us in a “metal carapace ... removing any sense of rootedness and belonging” (*ibid*). In this respect, it may even be desirable to somehow turn our cars into ‘places to be’, and not mere ‘spaces to do’.

Cresswell and Uteng (2008) note that while there is an established relationship between men and cars, the same cannot be said for women, who generally relate to cars differently than do men (Sheller and Urry, 2000), yet as part of a personal and social

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identity, whether as automotive avatar or apparel, the motor car or automobile is intuitively gendered. There is an ascribed, even entrenched, feminine identity assigned to the car – ‘she’, ‘the old girl’ and so on – but where this may have come from is unclear; Parissien (2013), while erroneously assigning a masculinity to the French noun for the motor car – surely *la voiture*? – states that, in the UK and US at least, the car was resolutely regarded as feminine, quoting an 1899 review from *The Autocar* magazine in which an unnamed reviewer driving an unidentified car said that “the ready and pleasant response to my guiding hand, varied by occasional fit of moodiness, not to say stubbornness, disappearing as rapidly as they appeared, make the appellation of the gentle sex particularly suitable to the motor car” (2013: 108). Such an approach towards a perceived masculinity to motoring was reflected in early attitudes towards female motorists, for whom piloting an automobile “entailed repeated confrontations with popular manners, morals and expectations” (Scharff, 1991: 17). While it has been suggested that the car has over time facilitated an empowerment and emancipation of women (Sheller and Urry, 2000), Scharff goes on to say that, since its inception, the car has been identified with masculinity such that women’s “right and ability to use cars has been disputed” (1991: 166) with women characterised as “antipathetic to automobiles” (*ibid*: 167) and, along with Mom (2004 – see 2.6.3 and figure 3.1), notes a contemporaneous view that “gas cars are were for men, electric cars for women” (Scharff, 1991: 37).

Jeremiah claims that such dichotomies persisted into the 1960s and 1970s, where an automotive narrative that “powerful cars were for men, while the simple and safe car was for women” (2007: 208) was reflected in contemporaneous (and on occasion sexist) advertising (*ibid.*) and that, despite the rise of feminism and subsequent post-feminism, little has changed in “the identification of sex and the car as an essential male fantasy” (*ibid*: 214). Indeed, such notions have long been manifest in the way cars are promoted, with Bayley stating that “the greatest marketing coup of the twentieth century was to relate the automobile to sex” (1986: 25) while Jeremiah notes how “gendering the car” (2007: 204) meant that marketers could appeal to both sexes by establishing a parity in performance and appearance and, indeed, led to the “the gendering of machines ... prompting questions on the notions of male dominance, femininity and the concerns of feminism” (*ibid.*). Henning posits gender-based differences in how the car is viewed within a different cultural medium, suggesting how

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the ‘car song’ (see 2.4) is grounded in gender politics, with a female perspective upon “relationships and connection” (Henning, 1998: 114) and a male perspective on “freedom and individualism” (*ibid.*) and how it “tells us much about the ways in which men make sense of their maleness” (*ibid.*: 116).

That the car has become the overarching and default mode of personal mobility might explain why it can be regarded as a conduit through which aspects of ourselves in everyday life are expressed (Redshaw, 2008). It is manifest in a multitude of makes, models and styles; an expensive purchase, its cultural status also renders it an aspirational artefact of societal and temporal significance. Yet despite the profound impact of the car upon society, the notion that “for some people ... cars are consumed simply with indifference” (Hewer and Brownlie, 2007: 106) may be one reason why, as noted above, the car has been ignored sociologically. Though the cultural capital of the car would suggest that there may be more to this notion of indifferent consumption than is first apparent, such non-consumption may prompt the question “when is car ... more than a car?” (*ibid.*). To answer this question, we need to enquire further, asking “when is a car more than its material substance ... its branded essence ... its production value ... its resale value?” (*ibid.*). Answering these questions may indicate whether such indifference can be said to be a form of consumption which may still mean that the car they drive imperceptibly acts as a conduit for self-expression (see 3.4).

Some light has been shed on this matter by the then BMW design chief Chris Bangle – whose occupation and oeuvre necessarily transcends the instrumentality of the motor car – in a speech at a Technology, Entertainment, Design (TED) conference in February 2002, where he stated that

“*Automobiles* are self-moving things, right? *Elevators* are *automobiles*. And they’re not very emotional, they solve a purpose, and certainly automobiles have been around for 100 years and have made our lives functionally a lot better in many ways, they’ve also been a real pain in the ass. Because automobiles are really the thing we have to solve. We have to solve their pollution, we have to solve their congestion – but that’s not what interests me in this speech. What interests me in this speech is *cars*. Automobiles may be what you use, but cars are what we are, in many ways. And as long as we can solve the problems of automobiles ... then I

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think we can look past that and try to understand why this hook is in many of us – of this car-y-ness – and what that means, what we can learn from it. And that’s what I want to get to. Cars are not a suit of clothes, cars are an avatar, cars are an expansion of yourself, they take your thoughts, your ideas, your emotions, and they multiply it – your anger, whatever, it’s an avatar. It’s a super-waldo that you happen to be inside of, and if you feel sexy, the car is sexy. If you’re full of road-rage, you’ve got a Chevy like a rock, right?” (TED, 2007 – *emphasis added from Bangle’s timbre, not evident in subtitles*).

From this statement, it seems that Bangle regards the signification provided by the car is rather ephemeral and fleeting, as if the car reflects our moods as opposed to our identities and, in doing so, he hints at an affectual ‘flow’ (Stewart, 2007 – see 3.4.1) between driver and car (e.g. Lorimer, 2008 – see 3.4.1.5), and alluding to the affective aspects of automobility noted by Sheller (2004) and Steg (2005). On the face of it, this notion is debatable, because if our car is a signifier, a representation of ourselves, then because our cars are always with us, no matter what our moods, they must reflect something more permanent than a mood. This implies that Bangle’s observation perhaps says more of what drivers say about their cars instead of what their cars say about them. In fact it is both, and it is by appropriating the notions of affect and non-representational theory (see 3.4), themselves ephemeral and fleeting, that it can be better understood how cars (and drivers) become ‘animated’ during travel, and how representations are presented (e.g. McCormack, 2003) on the road, so as to effect a holistic consumption of the car, going beyond a default constructivism and towards an ontology of animism (Ingold, 2006). The importance of this is highlighted by Gjølén and Hård (2002) who noted that the experiences of one of their electric car-owning respondents had changed “her ideas of what an automobile could be” (2002: 264), a notion which, in turn, leads us to reappraise “what a car is meant to be and to the construction of a new sense of mobility” (*ibid*) – or a new sense of automobility. Their study grounds the perception that our moods and feelings might be expressed and experienced differently in an electric car than in a conventional car.

Car manufacturers will have ideas about how their products should be perceived and received, whether they are sporty, glamorous or practical, and will supply information such as brochures, press releases, advertising, associated merchandise, or even product

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or celebrity placement with the intent of convincing us of an automotive ‘truth’. Postmodern, even subversive (Foster, 1984), consumption (see 3.2) can, however, empower us in that while corporations may sell us various artefacts that claim to enhance our lives upon consumption, how they are actually perceived and subsequently consumed is up to us (see also Harvey, 1990). Connotative knowledges or *savoir* (Lyotard, 1984 – see 3.2) mean that the power of their products is in our hands, since “a product only contains its last finish in consumption” (Storey, 2006: 175). For our purposes, this means that intended automotive narratives of manufacturers may be dismissed by consumers who subsequently provide their own automotive narrative, a notion which can be illustrated by the BMC Mini of 1959. Described as “[m]ore foolhardy than brave, more pure than simple” (Setright, 2003: 106), the Mini was a small, economical means of transporting four people, conceived as a rational, if innovative, engineering solution to the oil and petroleum supply problems wrought by the Suez Crisis of 1956 (Harvey, 1993; Golding, 1979); thus it can be said that such rationale meant that the Mini was modernist conception. Yet its modernist intent was subverted in such a way that it transcended such a prosaic rationale to become much more than mere economical transport; it became fashionable, fun and, subsequently, a much loved motoring icon which, despite being quintessentially contemporaneous, remained in production for 42 years, until the year 2000, and was voted ‘best-ever British car’ by readers of Autocar magazine (Autocar, 2012). A reason as to why the Mini came to be so regarded is because “a text will survive its moment of production if it is selected to meet the need and desires of people with cultural power” (Storey, 2006: 145); declared ‘chic’ by contemporary fashionistas, it became synonymous with the ‘swinging sixties’ (Harvey, 1993) and was adopted by celebrities such as John Lennon, Peter Sellers and Twiggy (Simms & Trott, 2006).

Another reason why the Mini became so regarded lies in how and why it transcended its prosaic brief. It was never designed to be cute, or fun, or fashionable, or loveable; it just *was*. That it was fun and fashionable (and, ultimately, iconic) became part of its essence, its nature, and was perhaps a perverse corollary of its engineering rationale. As such, the feelings in/evoked by the Mini illustrate the importance of employing *affect* as a framework to elicit a holistic consumption of the car (see 3.4.1).

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The way that the BMC Mini was ultimately received can be illustrated by the observation of Johnston and Sidaway, who note that humans are “more than a combination of living cells” (2004: 21), as they are possessed of “powers of reason and emotional traits” (*ibid*) and share both biological and socially constructed characteristics with other humans (*ibid*). Sir William Lyons, founder of Jaguar Cars, once said that “a car is about as close to the creation of a real life-form as any machine can get” (Bayley, 2011: 60). If we appropriate this notion, along with Bayley’s observation that “cars powered by internal combustion engines are anthropocentric, or at least feral, in their own right” (*ibid*), then, also following Bangle’s suggestion of the difference between an automobile and a car (TED, 2007), Johnston and Sidaway’s observation can be developed to suggest that a car is more than a combination or sum of manufactured parts that constitute an automobile, and it is by considering such a Gestalt (Humphrey, 1924) of the car that we can muse as to whether such anthropocentricity would diminish, or even disappear, with the adoption of, for example, an electric car possessed of fewer moving parts than its internal combustion-engined counterpart and demanding less manipulation or interaction, thus changing the nature of Dant’s driver-car hybrid (2004).

Possessed of both mechanical and socially constructed characteristics, a car’s style and practicality can provide and/or provoke both rationale and/or emotion. The way that a car does this (or not) thus provides a text to be interpreted. Storey (2006) points out that the difference between a book and a text is that a book is produced by a publisher, whereas a text is produced by a reader. This observation can be appropriated for our purposes by suggesting that just as a car is produced by a manufacturer, what a car says is produced by a ‘reader’; that is, though the style and specification of a car infuse it with a given purpose and market position/sector, the cultural and social values of the car means that, in use, it becomes a text produced not only by the motorist, but also by the pedestrian or bystander (it is suggested that this observation is also illustrated by the BMC Mini). The use of a car as a signifier need not assume that consumers have complete freedom in their choice of car. For example, budgetary constraints will undoubtedly limit a consumer’s absolute freedom of car choice, and so it can be argued that consumers will exercise their freedom of choice within their budgets. This may require greater discernment as motorists must decide what constitutes an acceptable

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choice of car, given any pecuniary limitations. This, in turn, suggests that our choice of car may act as more than just a signifier of personality.

The fact that the ‘text’ of the BMC Mini was appropriated in a way that went beyond its initial purpose seemingly justifies a need to go beyond a constructivist ontology (e.g. Thrift, 2008) to garner a holistic consumption of the car. The notion that, as representation, ‘your car says what you are’ may indeed be true but, as illustrated by the Mini, it is also possible for consumers to have a say in what a car is, and to imbue a particular brand, model, or style of car with a variety of values, both intended and unintended, both positive and negative. Indeed, the BMC Mini illustrates how the essence and/or nature of a car demands that we do, especially if, following Gjølén and Hård (2002) above, the nature and essence – the authenticity – of the motor car, both in general and in particular, changes with a move to a low carbon automobility.

This is because the car itself has become a “very mature product” (Bayley, 1996: 93) over time, in that it is unnecessary to explain the benefits it provides (*ibid*) and how it provides these benefits, manifest in the quality, safety and reliability of contemporary cars. Such maturity, coupled with the collaboration and platform-sharing within the industry e.g. Renault-Nissan and the Volkswagen group (Orsato and Wells, 2007) – and, more recently, Fiat-Chrysler – has the potential to lead to a homogeneity which renders distinctions and characteristics and, subsequently, knowledges necessary to invoke any emotional investment more difficult for consumers. Indeed, it has long been suggested that an increasing similarity of consumer products may lead to less discrimination (Grubb and Hupp, 1968) and, by implication, signification.

Such difficulty is exacerbated by the practice of ‘badge engineering’, whereby a car simply carries the badge of a different, but related, marque than the one that created it, as was practiced by BMC in the 1960s with its Austin, Morris, Riley, Wolseley and MG nameplates. Such badge engineering and platform-sharing has implications for the nature, the essence, the meaning of a given make or model of car and how it is regarded and the values subsequently invested – or otherwise – in it. Indeed, the badge engineering more recently indulged in by Fiat-Chrysler has attracted some ire from seasoned motoring commentators. For example, (subsequently founded) rumours of a decision by Fiat boss Sergio Marchionne to adorn the Lancia Delta with Chrysler

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badges prompted motoring journalist Gavin Green to claim that badge engineering “is deceitful because it pretends a car is something that it isn’t” (Green, 2010a) and that it devalues the car industry since “[m]ost of a company’s worth is its brand” (*ibid*).

Green goes on to state that the reason why brand equity and distinction is important to the car industry is because a “Ford is different from a Peugeot is different from a BMW is different from a Benz. They drive different, look different, smell different. Their bosses think different. Such distinction fuels the emotion that drives this business, and makes the car so very different from all other consumer goods” (Green 2010a). In echoing the earlier observation of Bayley (1986) regarding the culturally-grounded contemporaneity of the car, it is important to bear this final observation in mind, as it is a crucial factor in the consumption of the car, and one that has perhaps been overlooked in a discourse that has focussed upon the more instrumental (Steg, 2005) and technological factors of a low carbon automobility (e.g. Schipper, 2011; Coad *et al*, 2008).

For example, Bayley provides an interesting development of Sheller’s observation of car consumption being ‘aesthetic, emotional and sensory’ in noting how the aesthetics of cars has derived not only from the way they were powered, namely the internal combustion engine, but also from the *type* of internal combustion engine. He cites iconic car designs in making the case for this, saying that a “[19]59 pink Cadillac could only have been powered by a fat, lazy push-rod V8. A Fiat 500 was the inevitable expression of that cute twin cylinder [engine] ... the architecture of the E-Type is a shrine to the XK engine, carried prognathously by the car as a brazenly erotic symbol of power” (2011: 60) and, in doing so, alludes to how their various propulsions are themselves key to the essence of those particular cars.

This is illustrated in the way that a company in the USA took to retrofitting an electric motor and batteries to an iconic 1960s sports car, the AC Shelby Cobra (Blanco, 2008), a car which was noted for, among other things, the characteristic noise made by its engine. Replacing the guttural roar of its large capacity V8 petrol engine with a near silent high pitched whine of an electric motor in a car such as the AC Cobra will necessarily impact upon how the Cobra is consumed and experienced by driver,

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passenger and/or even pedestrians, and so it may be with the motor car in general with a move to a low carbon automobility.

Similarly, more mainstream electric vehicles such as the Mitsubishi i-MiEV/Citroën C-Zero/Peugeot iOn triplets or the Nissan Leaf highlight the importance of considering the nature, essence and authenticity of a car, with the former adapted from an existing ICE (internal combustion engine) model and the latter, although a bespoke electric vehicle, being developed in the conventional automotive architectural mien. This process is very much to the chagrin of Sir Clive Sinclair who, on an edition of the BBC technology programme '*Click*', lamented how current electric vehicles employ conventional styling and materials in much the same way that early automobiles adopted the contemporaneous mien of horse drawn carriages (BBC, 2010), and suggested that, instead, electric vehicles should represent an opportunity for revolutionary design and engineering (*ibid*), something that has been approached to a degree by Tesla's Model S and its supplementary front luggage space where an engine would sit in a more conventional ICE executive car. In respect of an automotive essence and nature, the fact that they were designed specifically to be electric vehicles means that the Tesla Model S and Nissan Leaf can perhaps be regarded as rather more authentic than such retro-engineered vehicles as an electrically-powered AC Cobra and the Mitsubishi i-MiEV/Citroën C-Zero/Peugeot iOn originally designed to be powered by internal combustion engines.

However it is approached, the packaging and resultant design ramifications of adopting low carbon technologies from a car's conceptualisation will necessarily mean that the nature and essence of the car might change with a move to a low carbon automobility, and could impact upon how the low carbon vehicles of the future are consumed.

However, it can be argued that the cultural essence of the car of the future may be fundamentally different than that of cars past. The reason for this assertion is that cars were historically imbued with notions of freedom; the freedom to go wherever and whenever, embracing the 'romance' of the open road. The freedom afforded by the mere access to a car, itself a sign of status, and the augmenting of such status by the acquisition of a car that was ever bigger and faster. There has been a freedom from worrying about the environmental impacts of the car. Types and models of cars,

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conceived with freedom at their core, were culturally appropriated and consumed, thus becoming contemporaneous signifiers (e.g. Gartman, 2004; Jeremiah, 2007).

The car of the future may never be possessed of such freedom. The part automobility might play in a dystopian future wrought by the impacts of climate change has been noted by Urry (2008) and, indeed, the number of cars on the roads globally means that automobility has become “a modern day Leviathan” (*ibid*: 265) that threatens to consume us, such is the grip that automobility has upon our lives. The environmental imperative demands that we concern ourselves with impacts and resources. Mobility has become a necessity more than a status, and it is possible that the car may follow suit, in that it may become necessarily rational to accommodate the environmental imperative.

For example, following the thoughts of Spinoza, Scruton notes that “desire is the very essence of man” (1999: 34) and, in a similar vein, it can be suggested that freedom is the essence of the car, such is the autonomy, the freedom to go anywhere, anytime, it affords. Yet if the car of the future is not possessed of the freedom or the essence it once was, whether – following Urry (2008, above) – by dint of a self-fulfilling Leviathanism or an environmental concern, as suggested above, or out of contemporaneous technological limitations such as a restricted EV battery range or a perceived lethargy, how might we desire it or consume it, and how will such a transition be performed? The way in which we have become conditioned to the car, especially as the mature product it is today, means that the move to a low carbon automobility has the potential to be quite disruptive (see 2.6.5) even if, following Urry (2008), our not adopting such a move may prove to be even more so.

Providing an answer to the question of future automotive desire and /or consumption is one reason why a sociology of the car is important and why its sociological neglect needs to be remedied. The earlier mentioned examples of the BMC Mini, of badge engineering and platform-sharing, and of the various powerplants utilised (and retrofitted) to iconic cars, show just how the way that a car is conceived, developed and powered has implications for the nature and essence of a car, for how it is consumed and for any subsequent meaning thus negotiated. But where and how might such meanings be sourced?

2.4 Knowing it all – acquiring automotive knowledges

The socio-cultural consumption of the car, like many other forms of consumption, requires us to acquire certain ‘knowledges’, such as the meaning or status of a brand or type of car, so as to ascertain to whom it might appeal to, whether to ourselves or to an ‘Other’ (Sarup, 1996). Following Lyotard (1984 – see 3.2), such knowledges are necessarily connotative in nature, that is, not based scientifically upon facts per se, but instead grounded narratively, upon personal interpretations and understandings to evoke individual ‘truths’. As noted in 2.3, those who wish to influence consumers, such as manufacturers and advertisers, will present us with ideas and images – their ‘facts’, their truths – yet how these are subsequently interpreted and consumed is subject to consumers’ *savoir* (*ibid.*) and, as such, beyond their control. But how and from where might automotive knowledges, opinions and meanings informing our automotive ‘truths’ be sourced?

How might an automotive laity, possessed of perhaps little interest in the car and whose only participation in an overt car culture may be limited to watching *Top Gear* on BBC2 on a Sunday evening, acquire their own automotive mores, definitions and opinions as to what is desirable or ‘cool’? One way might be how the car is presented factually in the media, and another being the way that the car is presented culturally – in mediums such as films, television, music, books and advertising.

The sources of such knowledges abound in the media, for example in daily newspapers (*Top Gear* presenter Richard Hammond’s motoring pages in the Friday editions of the *Daily Mirror*, or those of Ken Gibson in *The Sun*, also on Fridays, as well as motoring supplements in the *Sunday Times* and the Saturday edition of the *Daily Telegraph*), in specialised weekly or monthly publications (*Autocar*, *Auto Express* or *Car* magazine), or even by watching television (*Top Gear* on BBC2 or *Fifth Gear* on the Discovery Channel UK, formerly on Five).

Incidentally, these knowledges may also be acquired on a daily basis by simply “watching the people on the road around us and observing how they act, how they dress, or how they drive” (Kershaw, 2006: 36-37).

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It has been noted that journalists have a key role as gatekeepers to the cultural meaning of consumer goods (McCracken, 1986). This is because they act as arbiters as to the importance or otherwise of aesthetic and socio-cultural innovation (*ibid*) in their respective consumer fields. Insofar as the specialist motoring press is concerned, it has been observed that the British car magazine market is a ‘mature’ market in that there is a proliferation of ‘niche’ magazines, certainly more than is the case in Europe, USA or Australia (Green, 2010b). For example, whereas the US market is dominated by ‘*Auto Trend*’, selling millions of copies per issue, and the German market is dominated by ‘*Auto Bild*’ which sells many hundreds of thousands of copies per issue, the UK market has not only two weeklies – *Autocar* and *Auto Express* – but also a proliferation of monthly and bi-monthly titles (*ibid*) not only covering general motoring issues (*Car*, *What Car?*, *Top Gear*), but also classic cars (*Classic and Sports Car*, *Practical Classics*, *Octane*), sporting and modified cars (*Evo*, *Retro Cars*), motorsports (*Rally World*, *Autosport*) and even particular marques (*Triumph World*, *Mini Owner*, *Land Rover International*). However, despite such a proliferation of titles and genres, sales figures for car magazines in the UK are on the wane, with total car magazine sales falling 4.4% to less than 500,000 for the period January-June 2011 (Brand Republic, 2011).

While assessing the relationship between automotive media and automobile consumption, it is important to consider the contribution of the BBC programme ‘*Top Gear*’ to wider automotive knowledges and mores. Echoing the observation of McCracken (1986) above, two of its three presenters – Jeremy Clarkson and James May – are established motoring journalists, who adjudicate the aesthetic and socio-cultural mores of cars to a wide audience, and while the actual nature of *Top Gear*’s impact may require further investigation, the potential to inform and/or influence the opinions of a previously mentioned ‘automotive laity’ is huge as it tends to be the highest rated programme on BBC2 at the time of airing. For example, the 17th series, consisting of 7 episodes, aired in the UK from 26th June until 7th August 2011, with the 4th episode attracting the highest viewing figures of 6.07 million viewers (BARB, 2011), although the final programme of the series was viewed by only 3.33 million people (*ibid*); incidentally, the 20th series, which was screened between 30th June and 4th August 2013, opened with viewing figures of 5.55 million while the 3rd episode of the six was the least viewed, with figures of 4.83 million (BARB, 2013). In addition,

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the programme has been franchised in Australia and Russia (Bonner, 2010) and, more recently, the United States, its producers suggest viewing figures of 500 million viewers worldwide, though true figures are difficult to assess (*ibid*), and the programme is seemingly repeated in the UK *ad infinitum* on the cable/satellite television channel Dave (*ibid*).

However, despite its potential impact – socially, culturally and politically – Top Gear’s significance seems to have been largely ignored. A literature search for ‘Top Gear’ uncovers only four academic articles (Meadows & Sayer, 2013; Tranter & Martin, 2013; Harrington, 2010; Bonner, 2010) which begs the premise of the latter paper in questioning why ‘the world’s most popular programme’ (Bonner, 2010) seemingly doesn’t warrant inquiry. Nonetheless, the fact that Top Gear has so far been overlooked academically seems to mirror the observations of Merriman (2009) and Hawkins (1986) regarding the sociology of the car. Reasons suggested as to why the programme has been ignored include “generic hybridity ... conservative masculinity ... anti-environmentalism ... and... nervousness about confronting a text that so relishes its reactionary politics” (Bonner, 2010: 33), all of which might preclude academic publication, and may reveal themselves to be lacking a sense of humour (*ibid*: 43). The comment made on the US current affairs programme ‘60 Minutes’ by presenter Richard Hammond that the programme was “effectively ... three middle aged-ish men exploring their passion for cars and how cars matter to other people” (CBS News, 2010; Kroft, 2010) bears out the observation that the programme is “presenter-dominated; without them it would be nothing” (Bonner, 2010: 33). Despite this, and academic misgivings aside, *Top Gear* is nevertheless of vital importance in automotive discourse and, as Axsen *et al* (2013) found from responses during their research, a potentially critical element in the contemporary consumption of the car.

Of course, *Top Gear* isn’t the only television programme through which the meanings of cars can be grounded and negotiated – from action and or crime programmes such as *Knight Rider* or *Ashes to Ashes*, to situation comedies like *Only Fools and Horses* or *Keeping up Appearances*, and to films like *The Italian Job* or the *James Bond* franchise, the interplay of meanings between characters and cars is contested and negotiated by writers, directors, actors and audiences. This means that the relationship between film/television and the car, a relationship illustrated by the existence of an

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online repository of cars in films and television called the ‘Internet Movie Cars Database’ (IMCDB, 2014), has the potential to inform opinion and impact upon how cars are ‘consumed’. That *Top Gear* errs towards entertainment means it can act as a bridge between the media and more conventional cultural mediums of film and television, as well as – though perhaps to a lesser degree – music and literature.

It has been noted that that, while not the first example of the use of the car in literature, Kenneth Grahame’s *The Wind in the Willows*, written in 1908, is seen as “the ur-text for all subsequent motoring tales” (Samuels, 2002: 54). Augmenting Widmer’s observation of the pervasive quotidian nature of the car and its ‘inevitable’ cultural impact, below, John Dale, the head of creative practices at the University of Technology, Sydney’s Faculty of Arts and Social Sciences is quoted as saying that “for me, leaving out cars in contemporary literary fiction is like leaving out the horses in westerns” (in Taylor, 2008). But to what degree might any literary automotive references inform automotive knowledge or opinion?

From ‘*Rocket 88*’ by Jackie Brenston and his Delta Cats – regarded as the first rock’n’roll song – and Chuck Berry’s ‘*No Particular Place to Go*’ to Madness’s ‘*Driving in My Car*’ and Natalie Cole’s cover of Bruce Springsteen’s ‘*Pink Cadillac*’, the car has been celebrated in popular music, especially in the US; indeed, Widmer asserts that “what is remarkable about American popular music is the *ubiquity* of the automobile’s presence” (Widmer, 2002: 65 – original emphasis), though this is perhaps less so in the UK. Even songs not overtly concerning cars as brands or objects can be associated with the act of ‘motoring’, with a variety of compilation albums marketed as ‘driving songs’ or ‘driving anthems’, and the type or tempo of music listened to in the car is an important constituent of how the car is experienced (e.g. Bijsterveld *et al*, 2014), if not ‘consumed’ *per se*.

Whether on television or in print, advertising, and particularly – perhaps by dint of its status as ‘quintessential manufactured object’ noted by Urry (2004 – see 2.2) – car advertising, can be regarded as a cultural form in itself. For example, Baudrillard claims that advertising is “pure connotation” (1996: 164) and that it belongs in his ‘system of objects’ – that is the ways and means in which we relate to objects and the resultant relationships and behaviours therein – “not merely because it relates to

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consumption, but because it itself becomes an object to be consumed” (*ibid*) and it is pertinent to consider how car advertisements and the products they advertise are consumed today, and if there is a difference in the way that the meanings within advertisements for conventional ICE vehicles and low carbon vehicles are consumed. That said, while Baudrillard’s suggestion that “we consume the product through the product itself, but we consume its meaning by advertising” (*ibid*: 181) may indeed have some currency, then following earlier discussion about the Mini and also about how the car is ‘gendered’ (see 2.3), it also rather begs the question of ‘whose meaning?’ – the manufacturer’s or ours? The contemporaneity of car advertisements is also important because if we consider car advertising over the years (e.g. Swallow, 1993; O’Sullivan, 1998), we can see that such media is, like the product it represents, a culturally dynamic artefact (e.g. Gartman, 2004) and so it is interesting to consider how car advertisements, both past and present, may be regarded – and, indeed, remembered – and, indicative of how we may have travelled, how this may point to how we may go from ‘here’.

Although ostensibly a prosaic transportation tool, and regarded as such by many, Widmer states that “it is inevitable that any twentieth century art form should delineate cars to some extent, given their dominion over our everyday lives” (2002:65) and, following Gartman (2004), it is clear that the car is a culturally dynamic artefact whose presentation and representation are inherently contemporaneous, reflecting modes of consumption and production which are manifest as a social reproduction. Indeed, while it is claimed that “cars ... are not only to take us on our journeys, but to help us describe, understand and reflect on culture and society” (Samuels, 2002: 58), I would suggest that the reverse is also true, in that culture and society help us describe, understand and reflect on automobility and the car. As such, it is important to consider whether and how the cultural presentation and representation of the car plays a role in how people regard it, as part a holistic consumption of the car.

2.5 Leave only tyreprints? The environmental impact of the car

Urry (2008) notes that as social systems have contributed to global temperature increases, and will continue to do so, it follows that acknowledging the role of the ‘social’ is key to any study concerned with rising temperatures and carbon emissions. Once we do this, we can understand more about how we may ameliorate the impacts of our actions, or how we might alter our behaviours, which is why the question of

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whether adopting a greener automobility is efficacious, practicable and affordable, as well as desirable, is important.

Such is the way that we, whether as motorists or as a society, have become conditioned to the internal combustion-engined car in terms of what it means, what it does and how it does it (Bayley, 1986), that if we cannot 'love' low carbon vehicles, if they are an impractical pain to own, and if they are expensive to adopt, is the potential sacrifice of giving up more conventional cars worth it? Are the barriers faced by a low carbon mobility bigger than the levers that might propel it? Will the environmental imperative compel us to adopt a low carbon mobility anyway?

It is logical to address these societal issues prior to any economic evaluative study for progress in this field to be achieved. However, if a metric needs to be provided to answer this question, it can be provided by quantifying the impacts of contemporary automobility by means of ecological footprinting (Wackernagel and Rees, 1996) and making comparisons with the potential impacts of a future low carbon automobility. In echoing the classic Bruntland definition of sustainable development (WCED, 1987: 8), the Commission of European Communities (CEC) stated that a sustainable mobility should contain the impacts of transport on the environment, all the while allowing users to continue to enjoy the economic and social functions and cohesions that transport brings (CEC, 1992).

Though transport has long been the driving force behind growth and economic and societal progress, and continues to be so (Khan Ribeiro *et al*, 2007; Greene and Wegener, 1997), the fact that it is responsible for 20-25% of anthropogenic CO₂ emissions (Khare and Sharma, 2003; Barrett and Scott, 2003) means that the pursuit of a sustainable, low carbon transport system is desirable. Indeed, by extrapolating emission figures from a variety of sources (Khare and Sharma, 2003; Barrett and Scott, 2003; EU, 2006; Defra, 2005), it can be said that over 10% of all contemporaneous CO₂ emissions are produced by cars. The nature of car use means that it is the dominant source of CO₂ emissions within the transport paradigm (Schipper and Fulton, 2003) which, in turn, suggests that it is the car, or at least the overuse of the car, which is a key part of an unsustainable transport paradigm.

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The Bruntland definition of sustainable development (WCED, 1987) and its paraphrased transport equivalents have been rendered problematic due to an increase in out-of-town shopping centres and dispersed residential patterns (Jacobs, 1991), the perceived unreliability of public transport which makes it difficult to reconcile car use and the environment (SDC, 2006), and the inconveniences inherent in a fragmented transport system (CfIT, 2004), perhaps making such (over)use inevitable. These dispersals and difficulties are further complemented by the irrationality of car consumption; for example, Steg (2005) notes that the affectational aspects of car consumption, such as symbolism and feelings of power and arousal (*ibid.*) may explain the limited success of attempts to influence its use and, as such, policy makers would be wise to consider more than the simple convenience and flexibility that the car affords if they want to impact upon such. This observation echoes that of Dant (2004), who notes the importance of recognizing that, despite its environmental implications, the car is more than mere transport, and that progressing to a more environmentally friendly, low carbon mobility necessitates looking beyond the mere rationality of use. Yet, as noted by Waitt and Harada (2012), many studies resort to quantitative rather than qualitative methodologies when researching the mitigation of environmental impacts of the car.

An example of the irrationality of use extends from the privacy that car use affords. For example, Pooley *et al* (2006) note that, historically, people chose transport that offered minimum contact with other people and maximum control over both their journey and their privacy, with Henry Ford's democratisation of the car, along with other mass producers such as André Citroën, who made note of Ford's mass production techniques and introduced them to Europe, bringing such control and privacy to the masses. The apparent importance of privacy in transport is illustrated by the reluctance to sit next to others on public transport, only doing so when faced with the prospect of standing during our journey. This is despite the fact that "the emphasis on the value of privacy in cars operates to obscure the fact that mobility is essentially both private and public and above all social" (Redshaw, 2008: 153). However, while the number of one-occupant cars on the road might also have historically borne out this need for privacy, today it is also perhaps necessitated by multiple activities wrought by the postmodern fragmentation of our society, leading to many different people going to many different places at many different times. The car affords us privacy, freedom and individuality

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(Redshaw, 2008) as well as flexibility, whereas public transport removes these desirables as well as a perceived control over our mobility (*ibid*).

Kronenberg (2007) suggests that by making consumption reasonable, we can, in turn, make it sustainable. As a means to achieve this, he suggests appealing to reason, not emotions, and influencing the “beliefs, attitudes and expectations” (2007: 563) that consumers may have towards a sustainable consumption. However, this may be difficult in the case of the car, especially given the auto-affectational observations of Sheller (2004) and Steg (2005), necessitating the need for less polluting and low carbon forms of personal mobility.

What would constitute such a low carbon and low pollution vehicle? These vehicles can take various forms – the bicycle is perhaps the lowest carbon emitting mode of transport; buses and trains are routinely cited as a low carbon means of transport, especially on a per passenger/kilometre basis; conversely, aviation is deemed to be anything but. However, it is pertinent to assess the place of the car as a form of low carbon transport, because the notion of a sustainable mobility, coupled with the paradigm conflict of consumption between citizens and consumers, suggests that the car is crucial to a sustainable low carbon transport system if we are to live our lives as we want to, and how society – and a late-capitalist hegemony – perhaps expects us to. It can be said that the post-Fordist and postmodernist paradigms under which we live demand absolute flexibility (Kershaw, 2007), a flexibility which is both accommodated and coerced by automobility (Urry, 2004), meaning that perhaps the most immediate solution to a sustainable mobility lies in the pursuit of a greener automobility. The way in which we have become conditioned to the car suggests that it isn’t going away any time soon, and so we need to find out how we can use it better, until – and when – ‘better’ cars come along.

Mobility is a fundamental human need which underpins economic and societal progress (Khan Ribeiro *et al*, 2007). Seemingly as a reflection of this fundamental need, transport employs up to 10% of the working population (van Mierlo *et al*, 2006) and is responsible for up to 25% of anthropogenic CO₂ emissions (Khan Ribeiro *et al*, 2007; Khare & Sharma, 2003; Barrett & Scott, 2003). In contrast with falls in other sectors, CO₂ emissions from transport in Europe have risen by 36% since 1990 (EC, 2011a), a

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trend echoed by a global rise in transport emissions of 44.7% between 1990 and 2007 (Meyer *et al*, 2011).

Emissions from transport are an inevitable corollary of energy consumption by transport. In the UK, energy consumption due to transport has risen by 15% between 1990 and 2010 (DECC, 2011), a rise driven by a surge in aviation which accounts for 70% of the increase over this period (*ibid*). Conversely, energy consumption due to transport *fell* by 0.8% between 2009 and 2010, a third successive annual fall which has been largely attributed to a decrease in aviation due to adverse weather and the eruption of the Eyjafjallajökull volcano in Iceland (*ibid*), with other weather events and the effects of the UK recession playing a part in the previous two years fall in energy use (*ibid*). Nonetheless, passenger road fuel rose by 3% between 1990 and 2010 (*ibid*).

It had been estimated that the tailpipe emissions of CO₂ accounted for 60-65% of the lifetime greenhouse gas emissions of the car, whereas non-CO₂ emissions such as nitrous oxides (NO_x) accounted for 10%, manufacturing 10%, and fuel extraction processing and delivery the remaining 15-20% (OECD, 1993). More recent estimates of the car's lifetime CO₂ emissions suggest that 10% result from manufacture, 85% from the 'in-use' phase and 5% from the end-of-life phase (SMMT, 2012), a figure which approximates to the 75-80% quoted by Mikler (2010) who suggests that the car industry can contribute to reducing CO₂ emissions by improving the fuel economy of their cars.

The private car uses more energy and emits more greenhouse gases per passenger-kilometre than any other surface transport mode (Khan Ribeiro *et al*, 2007). In Europe, road transport accounts for almost 75% of transport emission (EC, 2011a), and it is claimed that the car alone is responsible for 12% of *all* CO₂ emissions within Europe (EC, 2011b). However, the fact that just over 10% of all anthropogenic CO₂ emissions come from personal transport is in itself empowering in terms of environmental mitigation and/or amelioration, as it means that it is within the power of the individual to mitigate and reduce these emissions.

Of course, there is more to transport emissions than CO₂. The transition from the horse to the automobile resulted in a welcome reduction in the amount of dust and flies

(Zierer, 1922), only to ultimately replace one form of localised airborne irritants for another. For example, road transport vehicles are regarded as a major source of what are known as ‘criteria’ pollutants, such as carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO₂) and ozone (O₃), with emissions of sulphur oxides (SO_x) and volatile organic compounds (VOCs) also attributed to road transport, especially diesel vehicles (Lave and Griffin, 2008; Holmén and Niemeier, 2003). However, while air quality has improved over time through the use of technology and legislation, such as the introduction of the three way catalyst to new vehicles in the 1990s (Holmén and Niemeier, 2003) and the latest Euro 5 and Euro 6 emission standards (EC, 2010), there are concerns about rising CO₂ emissions from road transport as the number of cars rises globally (Khan Ribeiro, 2007), with such emissions a corollary of engine efficiency and distances travelled due to the carbon content of fossil fuels (Potter, 2003), on average 2.4kg and 2.7kg of CO₂ per litre of petrol and diesel fuels respectively (*ibid.*).

2.6 Low carbon automobility – technologies, fuels and fixes

Whether due to the spectre of peak oil (Bardi, 2009), a more recent notion of a ‘carbon bubble’ (Carbon Tracker, 2013) – whereby fossil fuel reserves exceed carbon budgets, thereby ‘stranding’ fossil fuel investments – or even the environmental imperative itself, it is suggested that business as usual is not an option insofar as automobility is concerned. To this end, there are a variety of alternative fuels and low carbon technologies, which are being (or have been) pursued in the name of providing alternatives to the conventional petrol and diesel fuels to which we have become used, even conditioned.

2.6.1 Fuel cells and alternative fuels

Mobility provided by a long standing efficient technology powered by abundant resources with no pollutants or CO₂ emissions at the tailpipe sounds like it should be an answer to a range of problems from global warming to peak oil, and fuel cells, first demonstrated in 1839 (Nieuwenhuis and Wells, 2003; Motavalli, 2001), are a way of achieving this. In the case of a hydrogen (H₂) fuel cell vehicle (FCV), stored H₂ reacts with oxygen (O₂) from air to produce electricity and emit only water (Nieuwenhuis and Wells, 2003; Vishnyakov, 2006; Motavalli, 2001). However, there are problems. Although H₂ is the most plentiful element in the universe, and the 3rd most abundant on Earth (Smith *et al*, 2008), it does not naturally occur unilaterally, and requires

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separation from water by electrolysis or from hydrocarbons by re-formation (Nieuwenhuis and Wells, 2003). How this energy-intensive separation is carried out will impact upon the overall CO₂ emissions of FCVs, unless fuelled by renewable sources (*ibid*). Safety is another issue, as H₂ is widely perceived to be dangerous, and yet it while is acknowledged that H₂ is explosive and needs sturdy fuel tanks, it is no more dangerous to use overall than any other fossil fuel (Smith *et al*, 2008; Nieuwenhuis and Wells, 2003; Motavalli, 2001) and any perception of increased danger is perhaps an indication of the locking-in of the ICE vehicle (Ivory and Genus, 2010) in that the perceived danger of petroleum has apparently diminished with familiarity (Motavalli, 2001). However, one of the biggest obstacles to hydrogen fuelled mobility is cost. It has been estimated that prototype FCVs have cost \$2000-\$3000 per kW with high volumes reducing that to cost to \$225 per kW (Smith *et al*, 2008); in comparison, it is claimed that ICEs cost \$25-\$35 per kW (*ibid*), and cost is one reason why critics like Romm (2006) and Bakker (S, 2010) have rounded upon this technology.

Insofar as alternative fuels are concerned, examples include dimethyl ether (DME), normally used as a propellant in spray cans (Nieuwenhuis and Wells, 2003; EC, 2002), synthetic diesel or Fischer-Tropsch (F-T) liquids (Gill *et al*, 2011; Takeshita and Yamaji, 2008; Kreutz *et al*, 2008; Ogden *et al*, 2004), liquid petroleum gas (LPG) (Nieuwenhuis and Wells, 2003) and biofuel. The latter is controversial because while it is claimed to be carbon-neutral when derived from crops like rapeseed or palm oil (*ibid*), issues regarding fertilisers, pesticides and processing make the environmental claims regarding biodiesel questionable (EC, 2008), as do issues regarding biodiversity loss, world food prices and supply, and claims that CO₂ and NO_x emissions may actually increase as a result of their adoption (Kreutz *et al*, 2008; FoE, 2011; Johansson, 2003). Another source of biofuel being investigated is algae which, like crop feedstocks, remove CO₂ from the atmosphere as they grow (Demirbas A, 2010), leading to similar carbon-neutral claims, all the while offering substantial time and yield advantages over them (Demirbas MF, 2011).

Although fuel cells and alternative fuels continue to be developed, more pertinent to this study of low carbon automobility are more immediate technologies of hybrids and electric cars.

2.6.2 Hybrid vehicles

The origins of the hybrid electric vehicle (HEV) go back further than one may think. Although the Toyota Prius, first introduced in 1997, may have become synonymous with hybrid technology, the first HEV was the Lohner-Porsche constructed in 1900 (Svens *et al*, 2011).

There are two basic types of hybrid technology applied to cars – series hybrids and parallel hybrids (Motavalli, 2001). A *series hybrid* is one whereby an internal combustion engine (ICE) is employed not to directly propel a vehicle, but to generate power to an electric motor which, in turn, drives a vehicle (*ibid*; van Mierlo *et al*, 2006) and is also an integral part of an extended range electric vehicle (Ernst *et al*, 2011) such as General Motor's Volt/Ampera. A *parallel hybrid* is a system which both electric and ICE power units work either individually or together to propel a vehicle (Motavalli, 2001; van Mierlo *et al*, 2006). This is the system used by Honda, which they call Integrated Motor Assist, or IMA, whereby the electric motor is deployed for low speed cruising, the ICE operates at higher speeds, and both powertrains combine together to provide maximum torque at a standing start and to give additional boost for rapid acceleration, with kinetic energy recovered under braking and deceleration (Honda, 2011). Both systems can be combined to create a *series-parallel hybrid* system whereby on-board battery power is used at standing starts and slow speeds for short distances, with an ICE driving the car the rest of the time while also recharging the batteries (Motavalli, 2001; van Mierlo *et al*, 2006). Kinetic energy is recovered by regenerative braking and both motors can combine under sudden acceleration under this system, which is utilised by Toyota (*ibid*) in their hybrid models under the moniker of Hybrid Synergy Drive (Toyota UK, 2011a).

Toyota (among, more recently, others such as Volvo) has developed a plug-in hybrid electric vehicle (PHEV), specifically a plug-in version of the Prius, equipped with lithium-ion (Li-ion) batteries which is able to travel up to 12.5 miles (or 20km) on purely electric power and which went on sale in the UK in July 2012 (Pollard, 2012; McNamara, 2011). Given the limitations of purely electric vehicles (see below), the PHEV may be the best contemporary compromise between zero emission and practicality; indeed, range issues concerning BEVs prompted Romm to come to the

opinion that the hybrid-electric car is the way to proceed with “urban zero emission vehicles” (2006: 2613) as a way of addressing range anxiety and infrastructure.

However, one of the critiques of hybrid vehicles is that they add complexity and weight to existing car technology for dubious gain as far as fuel economy and CO₂ emissions are concerned, especially compared to modern diesel engines (Clean Green Cars, 2010). In addition, how little the emission and fuel economy claims made by manufacturers of hybrid vehicles bear any resemblance to real life economy and emissions is an issue that has also been raised (see EU, 2011; T&E, 2013), raising doubts as to their true efficiency and the pursuit of a true low carbon automobility may be better served by electric vehicles (EVs).

2.6.3 The electric car – battery electric vehicles

The way that car manufacturers are currently developing some form of electric propulsion, whether hybrid or fully electric, as a means to reduce the carbon emissions of their products, might imply that this is a new idea; indeed, the fact that various Government-backed vehicle trials, such as the CABLED (Coventry and Birmingham Low Emission Demonstration) trial (see 4.3.4.4) have been taking place might even reinforce this notion. In fact, the electric vehicle has a surprisingly long history. But how did we get to where we are today, and how did the hegemony of the internal combustion engine originate?

Although the genesis of electric vehicles is unclear, it is suggested that the first electric vehicle was made in 1888 (Motavalli, 2001) and that there were 10,000 electric vehicles – 6,000 electric cars and 4,000 electric commercial vehicles – registered in London by 1910 (Ivory and Genus, 2010); incidentally, by means of comparison, there were approximately 56,000 electric vehicles in the USA in 2007 (Goodwin, 2010). Yet by the 1910s, the electric car was usurped by the internal combustion engine and, conspiracy theories (e.g. Black, 2006) aside, there is no single answer as to why the internal combustion engine established its dominance (Unruh, 2000).

Potential ‘rational’ reasons cited include the fact that the cost of gasoline, regarded at the time as an unwanted by-product of kerosene production, was cheap, or at least sold – after several price rises – at a price considered acceptable compared to the overall

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expense of owning a car (McCarthy, 2007), whereas electric cars were expensive to run (Thorold, 2003) as well as to buy (Ivory and Genus, 2010). The quality of roads in the US in the early days of motoring were such that the limited range of the electric cars was not the immediate practical disadvantage it might be today as most cars were kept within urban confines (Motavalli, 2001), although such limited range issues would subsequently become exposed at a time when ‘gentleman racers’ would go ‘motoring’, or ‘touring’, in their petrol-powered cars (Ivory and Genus, 2010). Despite protests against their speeding and arrogance, the antics of these gentlemen racers had a heady effect upon the public who aspired to car ownership (McCarthy, 2007) even though early petrol cars were noisy, dirty and smelly (*ibid*) – and no doubt part of the ‘pastoral demonisation’ of the car mentioned by Hawkins (1986; see 2.3) – characteristics to which the ‘clean’ electric car would have provided a ready antithesis. The introduction of the electric starter motor in 1911 heralded the demise of hand-cranking, a potentially dangerous activity necessary to start early ICEs (Nieuwenhuis and Wells, 2003; Motavalli, 2001), and perhaps hastened the demise of the electric car (Mom, 2004), as it was by then apparent that the electric car was indeed compromised by a limited range and lack of charging infrastructure (Ivory and Genus, 2010) as more cars went further beyond urban confines. (Such range and infrastructure issues are still prevalent today, and trials such as the CABLED trial are providing data on how such concerns are perceived, experienced and addressed in the real world).

Fast-forward to the present day, and the compromises which beset the electric vehicle 100 years ago still possess a contemporary resonance. For example, despite soaring prices, it has been claimed that the cost of petrol, and of motoring in general, has actually fallen in recent years (Bennett, 2011; Wyatt, 2011; Turrentine and Kurani, 2007). While contemporary electric cars are much more expensive to buy than ICE vehicles, they are potentially much cheaper to run (see 2.7). More tellingly, the limited range of current electric cars perhaps illustrates how little battery performance has actually advanced in the last century, especially given the observation that “lead-acid batteries, even as late as 1910, were only capable of sustaining a discharge of 50 to 80 miles” (Genus and Ivory, 2010: 1112). This is perhaps surprising, given the developments in battery technology in recent years. Lead acid batteries were still being used for some time later, for example in Ford’s experimental Comuta of the 1960s

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(Science Museum, 2011) and, more recently, in the cheaper models of the current Reva G-Whiz (GoinGreen, 2011; Mahindra Reva, 2004).

Issues of range highlight how the characteristics of various battery technologies which impact upon the practicalities and usefulness of EVs (Ovshinsky *et al*, 1993) are key to any acceptance of EVs, both now and in the future, and indeed the technological shortcomings of low carbon vehicles have been well documented. Electric vehicles traditionally have had a limited range and can require lengthy recharging (SURGE, 2010) – although rapid chargers are becoming more prevalent, enabling longer journeys to be undertaken e.g. Ecotricity's 'electric highway' network of rapid chargers (Ecotricity, 2013) – and although the mode of electricity generation is key to their environmental efficacy (Orsato *et al*, 2012; Hawkins *et al*, 2013), electric vehicles do have the advantage of zero emissions at the 'tailpipe' (at least), something that hybrids cannot boast, while the range issues are being addressed as battery technology advances (e.g. Alkhalisi, 2014). Electric cars are growing in size beyond urban runabouts such as the G-Whizz and the Renault Twizy, becoming suitable for families e.g. the Tesla Model S and the Nissan Leaf, the latter of which became the first EV to be declared European Car of the Year (Car of the Year, 2010; Pollard, 2010b).

In addition to the rational compromises and/or impracticalities mentioned earlier, it has been suggested that there were also societal reasons behind the early demise of the electric car. It is suggested that the failure of the electric car to establish itself lay in the culture of the market at the time – it was seen as clean and, therefore, feminine at a time when the exploits of the petrol-powered car signified "masculinity ... adventurousness and daring" (Ivory and Genus, 2010: 1118). Indeed, the femininity of the electric car was propagated more by manufacturers who would make cars akin to "parlours on wheels" (May, 1990 in Mom, 2004: 276) equipped with "overstuffed seats and luxury features" (*ibid*). Mom (2004) also claims that there is an implicit link between the introduction of the electric starter motor for ICE cars and the notion of the electric car as a 'woman's car' (see also Scharff, 1991), as by making the task on hand-cranking redundant, the starter motor made the ICE car suitable for women, thus tolling the death knell for the electric car. The inability of the electric car to inspire a "performance-symbolism nexus" (Ivory and Genus, 2010: 1118) a century ago is still relevant and, because the innate characteristics of electric motors means that EVs provide a different

kind of performance to ICE cars – with instant torque from standstill meaning instant acceleration but less ultimate maximum velocity – establishing such a nexus may require a change in the way automobility is consumed, whether by dint of strategy, policy or sub-culture (*ibid*), not least because the rationale behind EVs (e.g. amelioration of automotive environmental impacts) has changed. This view is partially reflected by Heffner et al (2007) and is a notion that informs, or may be informed by, this study.

2.6.4 Breaking the ICE

It seems that motorists are still wedded to the internal combustion engine as a means to power the car in one form or another. This claim is reflected by sales figures from the Society of Motor Manufacturers and Traders (SMMT) who reported that annual sales of alternatively fuelled vehicles (AFVs) stood at 14,963 units in 2009, which constituted 0.8% of the new car market (SMMT, 2010b), and that 97.9% of these 14,693 units were petrol/electric hybrids (*ibid*), such as the Toyota Prius, meaning that just over 300 purely alternative fuelled vehicles were sold, 2% of the AFV market.

However AFV sales, while small, are nonetheless rising. In 2013, sales of AFVs stood at 32,731 units, or 1.4% of the new car market (SMMT, 2014), with 79.5% of these being petrol/electric hybrids, while 2512 EVs were sold (7.7% of AFV share); diesel/electric (3114 sales, 9.5%) and plug-in electric (1072 sales, 3.3%) made up the rest of the AFV market share (*ibid*).

The potential for a future uptake of low carbon vehicles is not just a matter of their desirability. The internal combustion engine has been the dominant form of propulsion for the private car for almost 100 years, meaning that alternative technologies have been effectively ‘locked out’ (Dijk and Yarime, 2010; Ivory and Genus, 2010). This lock-out means that a plethora of emergent technologies – HEVs, PHEVs, BEVs, fuel cell vehicles (FCVs) – will require a further acquisition of knowledges beyond those garnered over years, ‘locked in’ to conventional internal combustion engine vehicles, if they are to be utilised effectively in the course of low carbon automobility. This acquisition of such knowledges, and the implementation of new practices – as highlighted in Thrift’s third tenet of non-representational theory (Thrift, 2008; see

3.4.1.3) – in automobility is an example of how electric vehicles, for example, may be regarded as a “disruptive technology” (Barkenbus, 2009).

As a disruptive technology, Barkenbus suggests that the electrification of transport will “overturn existing institutions and bring about new ways of providing services we have come to depend upon” (Barkenbus, 2009: 399), thus permitting a restructuring of transport and land use which will change the way in which we travel (*ibid*). For example, car-sharing schemes where, for a daily fee or a longer subscription, members of such schemes can access and drop off cars within prescribed urban limits have been in existence for some time (Firnkorff & Müller, 2011; Shaheen et al, 1999) and while such schemes are predicated on reducing both traffic congestion and emissions concomitant with car use, they can also act as a means to facilitate the roll-out of emergent low carbon technology (Coffey and Thornley, 2012; Glotz-Richter, 2012; Riversimple, 2014), not only in terms of provision, but also in terms of exposure to these technologies, as exemplified by the Autolib EV car sharing scheme in Paris (Autolib, 2014). However, while car-sharing schemes have provided a challenge to the notion of, and need for, car ownership, contemporary regard of the car may render such a challenge problematic (Glotz-Richter, 2012), and car manufacturers can look at ways to ease the transition to EV mobility by facilitating longer-distance travel to their customers, such as the scheme operated by BMW whereby buyers of their newly introduced i3 electric car can redeem pre-allocated ‘points’ to use other models in the BMW range for finite periods over a year (BMW, 2013a).

Such restructuring and toppling of institutions in the name of automobility is nothing new and, is perhaps innate to the autopoietic nature of automobility (Urry, 2004). In addition, as a disruptive technology, the EV underlines Bayley’s (1996) claim of the (ICE) car as a mature product, as not only it will be necessary – both now and in the future – to educate the public as to the benefits of the EV given the cost (see 2.7) and practical advantages (see 2.6.3) of ICEs over EVs but also because, until more recently, there were some EVs available which can be said to have been of dubious quality and utility, such as the G-Whiz mentioned in 2.6.3, especially compared to existing ICE cars.

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That HEVs, EVs and FCs can all trace their origins back over a century ago, and yet still be perceived and developed as cutting-edge technology, is somewhat surprising, and illustrates how much we have indeed become locked-in and conditioned to the fossil-fuelled ICE. Whether this is by dint of the indolence and ineptitude of the car industry (see McCarthy, 2007), the machinations of an oil industry that, without diversifying their portfolios, would clearly have something to lose with a wide scale adoption of low carbon vehicles (Black, 2006), or a combination of the two, is open to debate. Nonetheless, a century's development appears to have been lost courtesy of the lock-in of the ICE and, given the recent resurgence in EV activity, it is also fair to say that, following the case of the GM EV-1 (Garud & Gehman, 2012; Olson and Thjømmøe, 2010, Rogers, 2010) documented in the 2006 film '*Who Killed the Electric Car?*' (Paine, 2006) – and a decision later described by former GM CEO Rick Wagoner as the worst decision made by GM under his tenure (Garud & Gehman, 2012) – a crucial decade's development of the EV has at the least been postponed which has, in turn, permitted traditional 'milk-float' discourses to prevail.

2.7 Counting the cost – the price of low carbon automobility

It is widely acknowledged that there is a pecuniary dichotomy or conundrum at play insofar as low carbon vehicles, especially electric vehicles, is concerned. As noted in 2.6.3, electric cars are comparatively expensive to buy, not least because of the cost of their batteries although, as exemplified in 2.6.3 by the Nissan Leaf, their prices are coming down. However, they are cheap to run; certainly cheaper than comparable, if not all, ICE vehicles. Fuel economy is an issue with which all car drivers are only too well aware, and the price of oil is a key driver behind the costs of motoring. Indeed, it has been noted that the price of oil rose 300% between 2003 and 2008, after which the price stabilised at more than twice what it was before 2004 (Mikel, 2010). Such a price rise meant that the price of petrol rose by 82% over that time, while that of diesel rose by 54% (*ibid*); indeed, it has been suggested that rising oil prices may “render the ICE commercially obsolete as a mass proposition” (Coffey & Thornley, 2012: 743), climate change costs notwithstanding. By contrast, electric cars can be run for a fraction of the cost, especially if drivers are able to take advantage of overnight domestic charging, and it has been suggested that the 'whole life costs' of EV ownership are less than those of an ICE vehicle (McMorrin *et al*, 2012) once the higher running and service costs of ICEs compared to EVs are taken into account.

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Insofar as conventional vehicles are concerned, another cost consideration aside from fuel economy is Road Fund Duty – more commonly referred to as ‘road tax’ – which is currently scaled according to CO₂ emissions based on official EU figures collated from the NEDC (New European Driving Cycle) test (UN, 2011: 87-89), with vehicles emitting between 111g-120g CO₂/km currently taxed at a rate of £30 per year, compared with £500 (after the first year) for vehicles emitting 255g CO₂/km or more (UK Government, 2014a); incidentally, ICE and hybrid vehicles emitting less than 100g CO₂/km are exempt from Road Fund Duty, as are electric cars (*ibid*). Another tax imposed upon the car, in the UK at least, is company car tax (UK Government, 2014b), otherwise known as ‘benefit-in-kind’ (HMRC, 2014) or ‘BiK’, which is influenced, among other things, by a car’s CO₂/km emissions. This means that a car’s official CO₂/km emissions can impact upon a fleet-based adoption of a particular car, and is perhaps one of the reasons behind diesel cars, which emit less CO₂/km than their petrol equivalents, now accounting for the majority of new car sales (49.8%) compared to petrol cars (48.8%) and alternatively-fuelled vehicles such as hybrids and EVs (1.4%) in the UK in 2013 (SMMT, 2014). Theoretically, this means that EVs should avoid BiK, thus providing another fiscal incentive encouraging a fleet-based uptake.

On a wider scale, a variety of financial incentives have been used to ‘green’ the national car fleet. One example was the UK Government-funded ‘scrappage scheme’ of 2009/10, whereby the public were afforded a £2000 grant/incentive to trade in cars over 10 years old for a new one, in a bid to help the UK motor industry during the recent recession. The scheme was also hailed by the Government for its environmental credentials, taking ‘smoky old bangers’ off the road to be replaced by cleaner, more environmentally friendly models. The environmental advantages of removing some arguably perfectly usable, low mileage vehicles from the road to be replaced by newly constructed ones, with the environmental impacts therein, are debatable (Wells, 2010); for example, it has been suggested that around 10% of the life time greenhouse gas emissions of a car are accounted for by its manufacture (OECD, 1993).

Another government-funded policy to green the national fleet is an electric vehicle ‘plug-in grant’ scheme, offering grants of up to £5000 for buyers of electric and hydrogen powered vehicles (DfT, 2010). Originally due to run from January 2011 until

2014, it came under review following the May 2010 election result (*ibid*), and the scheme was set to continue to be funded until 2015 (DfT, 2012), but this has subsequently been extended once again until 2017, or until 50,000 cars have been sold (OLEV, 2014); in addition, the plug-in grant scheme has also been extended to include plug-in vans, which are eligible for a grant of £8000 (*ibid*). While these constant extensions to the plug-in grant scheme are, on the face of it, good news, it can be argued that they provide a degree of uncertainty to a nascent EV market in need of support and stability, and are perhaps a reflection of the sluggish uptake of EVs (Begley and Berkeley, 2012).

Nonetheless, the importance of pecuniary inducements has been noted by the Society of Motor Manufacturers and Traders (SMMT). Speaking about the importance of low carbon vehicles upon the UK fleet market, the then chief executive Paul Everitt suggested a marked increase in the uptake of low carbon vehicles as a result of ‘low carbon vehicle incentives’ and taxation based upon CO₂ emissions (SMMT, 2010a). The success of, and the extent to which, such pecuniary inducements may effect a switch to a greener automobility needs to be assessed.

2.8 Going from here?

The autopoiesis of the internal combustion-engined system of automobility, so crucial to the domination of the automobile and to the way we have become conditioned to the car (e.g. Black, 2006; Sloman, 2006), has resulted in a landscape and a mindset into which a low carbon automobility doesn’t quite fit. For example, while electric cars can use existing roads and highway infrastructure, a recharging infrastructure is lacking, charge times are much longer than current refuelling times, and battery range an issue too, all of which leads us to ponder if and how an EV system of automobility can enact an autopoiesis of its own. As is the way with new or disruptive technology, there is inevitably a pecuniary barrier to acceptance, though the size of this barrier is exacerbated by the fact that although contemporary hybrid/battery/fuel cell technologies are new (although their various rationales date back to the late 19th/early 20th century (Motavalli, 2000), the automobile isn’t new. It is a very mature product (Bayley, 1996), and the cultural conditioning wrought by the ICE means that low carbon vehicles face quite a formidable benchmark in terms of cost, together with that of their technology regarding convenience.

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With all this in mind, this literature review has provided an overview not only of the sociology of the car, but also its environmental impacts, the technologies which can assist in the amelioration of these impacts and the fiscal considerations which, no matter our own automotive aspirations, necessarily influence, and even ground, quotidian automobilities.

Sections 2.3 and 2.4 presented an overview of how we can consider a sociology of the car and how the motor car is more than just transport, transcending mere utility to be regarded as a culturally dynamic and gendered artefact which is socially and culturally consumed, even if it is consumed subconsciously. To consider a consumption of the car more fully requires us to look upon and beyond a default ‘you-car-says-what-you-are’ approach, and how such an approach can be performed and explored is noted in the following chapter (3.2, 3.3 and 3.4) and the results of this approach are detailed in chapter 6, ‘Automotive for the People’, particularly in 6.4 and 6.5.

In considering the environmental impact of the car, as well as the technological and pecuniary aspects of low carbon automobility, sections 2.5, 2.6 and 2.7 have laid the ground for a more documentary approach to analysis of the realities of low carbon automobility, including the knowledges, opinions regarding low carbon automobility on the part of both motorists and stakeholders. These findings are considered in chapter 5, ‘Low carbon vehicles: the here and now’.

It is in grounding extant automotive aspirations and expectations in the societal, technological, fiscal and environmental realities of automobility that we can consider how we go from ‘here’.

3. Ontology and epistemology

3.1 Introduction

The nature of this study, in terms of its subject and of what it intends to assess, necessitates a rationale possessed of a constructivist ontology grounded in both a postmodernist epistemology, to assess the car as representation, and supplemented by an affectual and/or non-representational epistemology, to investigate the car as presentation (see 2.3).

A constructivist ontology maintains that we can only garner knowledge by assessing how we semiotically communicate via representations of the world around us (Stainton-Rogers, 2006), inevitably providing us not only with an innate variety of narratives (*ibid*), but also with a variety of ways in which these narratives are communicated. The meta-narratives associated with a modernist epistemology have been rent asunder by postmodernist thought (Knox and Pinch, 2000; Lyotard, 1984) such as Baudrillard's assertion that postmodern society revolves around signs and images (Elliott, 2009), an assertion that has perhaps underpinned much societal automotive discourse. Though it is claimed that we may be in a post-postmodernist phase (Nealon, 2012), a claim supported by the apparent disappearance of postmodernism from mainstream academic discourse (Matthewson and Hoey, 2006) and the emergence of alternative theories such as Zygmunt Bauman's 'liquid modernity' (Bauman, 2000), it is suggested that "a seemingly unstoppable universal consumerism" (Elliott, 2009: 232), with all its semiotic connotations, may have actually prolonged the postmodernist epistemology, a suggestion seemingly borne out by the notion of postmodern marketing (Brown, 1993) and the subsequent discussion (e.g. Simmons, 2008; Addis and Podestà, 2005) thereon.

However, while such an approach may be satisfactory in assessing our consuming the car merely as personal icon, artefact and/or signifier, it is not enough to explain how we *feel* and subsequently *perform* the consumption of the car so, an aspect crucial as the nature of the car changes with a move to a low carbon automobility. To explain this, we must turn to more recent forms of enquiry in human geographical discourse – the notions of affect and of non-representational theory (Thrift, 2008, 2004; McCormack,

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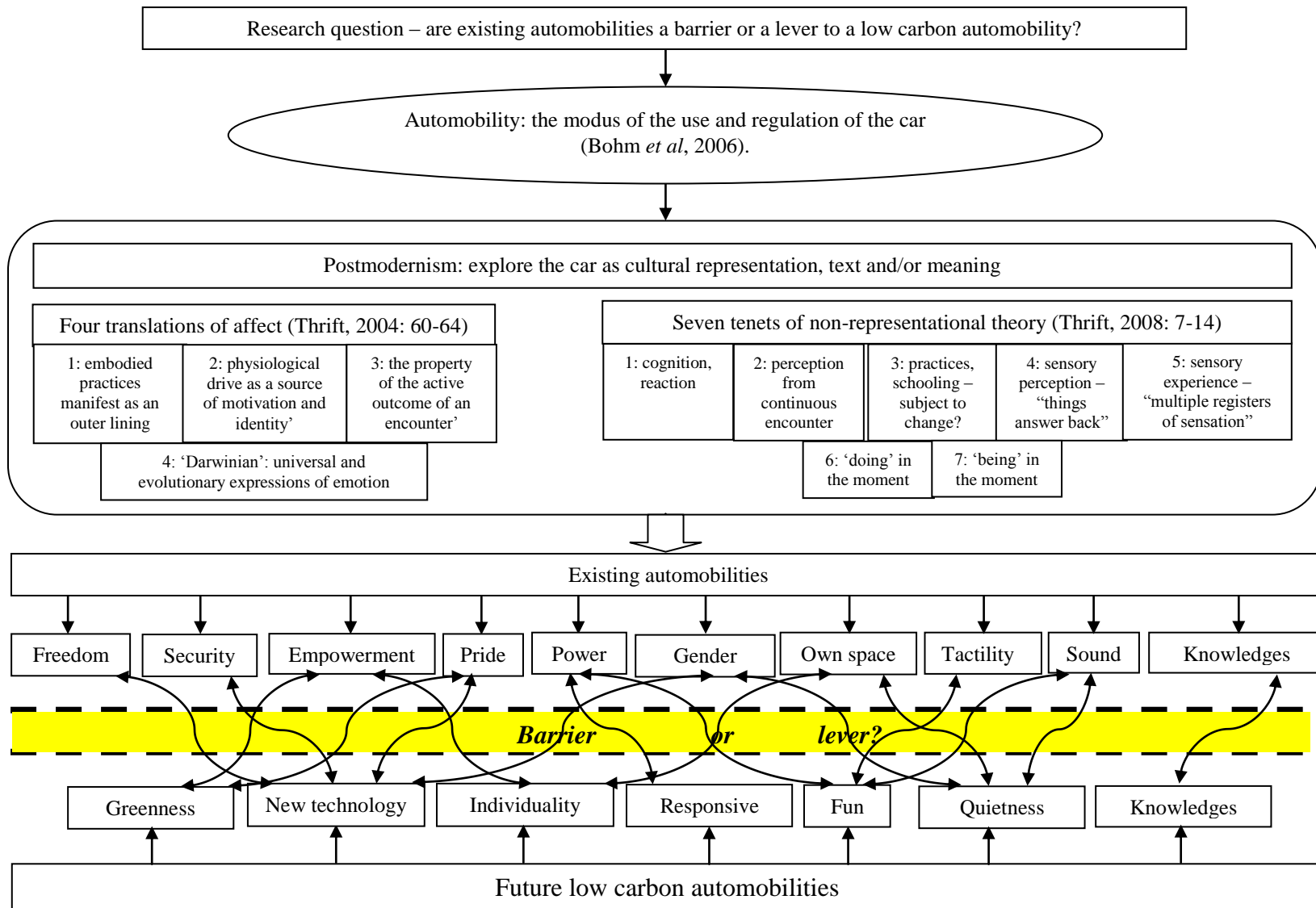


Figure 3.1 ‘How do we go from here...?’ conceptual framework

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2003, 2005). This is because it is by applying an innate cognisance or *savoir* (Lyotard, 1984) that “the representations ... we make become comprehensible” (Smith, 2003: 68).

These combined epistemologies are a comprehensive and suitable way to consider the societal consumption of the car. This is because it is in appropriating a postmodern epistemology to assess the rationale of the car as cultural representation and/or text, and an affectual or non-representational epistemology to assess the manifestation of the car as quotidian event, we can provide a more complete picture of car consumption, and in presenting a holistic consumption of the car we can begin to assess the potential for a low(er) carbon automobility.

To illustrate how these questions may be resolved, figure 3.1 illustrates the conceptual framework behind this research whereby, having ascertained a definition of ‘automobility’, then schematically lays out the theoretical lens of the combined epistemologies mentioned above, namely Thrift’s translations of affect (2004) and tenets of non-representational theory (2008) applied along with a wider postmodernism (explained in greater detail in 3.2 and 3.4). This theoretical lens is intended to consider aspects of both existing and future low carbon automobilities (as illustrated) to which the conceptual framework may be applied, and how they may relate to each other, so as to explore how extant and low carbon automobilities are manifest and experienced, and so ascertain how the former may impact upon a low carbon vehicle.

As such, the figure posits aspects concomitant with the car as a social, cultural and gendered artefact (see 2.3 and 2.4) and associated with automobility, for example feelings or notions such as freedom, security, empowerment and pride; influences such as power, gender and knowledge; and manifestations such as tactility, sound and the car as personal space. Figure 3.1 also posits potential aspects that may be associated with future low carbon (e.g. electric) automobility, for example the new technology and/or other hardware that may foment feelings that may be different to those engendered by conventional automotive technologies, for example ‘greenness’; the manifestations of new technology such as individuality, responsiveness, quietness, even fun; and, as with conventional automobilities, the concomitant sources of knowledge with which we are presented and the gleaned knowledges we subsequently apply (see 2.5, 2.6 and 2.7). How will feelings of freedom, security, empowerment and pride be reconciled within a

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new low carbon technology that may change automobility as we know it? Or the tactility and sound of conventional ICE vehicles be experienced and/or compare with those possessed of EV characteristics? What knowledges are/can be cultivated with regard to ICE (and EV) vehicles and how are they applied and manifest?

It is hoped that exploring these issues will not only contribute to establishing the contemporary consumption of the car, but also ascertain if extant and future low carbon automobilities are necessarily discrete in terms of quotidian automotive processes, experiences and feelings, thus acting as a potential barrier to low carbon vehicle uptake, or whether aspects of extant automobility might facilitate it, or if indeed it makes any difference at all.

In addition, a seemingly pervasive extant modernist environmental regard (Bordessa, 1993), promulgated by neoliberal economic theory (Dalby, 2007; Bakker K, 2010), suggests that postmodernism, far from being a passé philosophy, is of relevance for a societal reassessment of the environmental imperative, something upon which the car can have a profound impact at a variety of scales, and this is appraised in 3.3. It is apposite, therefore, to appropriate an environmental modernist/postmodernist turn and the automotive Fordist/post-Fordist turn, as it is by considering how extant automobility may impact upon the contemporary environmental impact of the car that we can establish a connection between socio-environmental politics and the car, and thus also begin to effect a low carbon automobility.

3.2 Postmodernism is dead – long live postmodernism

The rise of postmodernism is concomitant with the recognition that “each [of us] exists in a fabric of relations that is now more complex and mobile than ever before” (Lyotard, 1984: 15). Thirty years on, it is fair to say that cultural and economic changes in western society, such as a pervasive neoliberalism and the rise of “authoritarian capitalism” (Sloterdijk, 2005 in Thrift, 2008: 3) and changes in social mores and technologies, mean that this fabric has become ever more complex and mobile.

While Matthewman and Hoey (2006) believe that is some debate as to when postmodernity first appeared, Harvey (1989) suggests that it was sometime in the early 1970s, whereas Lyotard suggests that it has been with us since “at least the end of the

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1950s” (1984: 3), a time when “societies enter[ed] what is known as the postindustrial age and cultures enter[ed] what is known as the postmodern age” (*ibid*). But what do we mean by postindustrial society and postmodern culture? As industrialism can equate to Fordism, or mass production, postindustrialism can equate to post-Fordism, at time of more flexible production. Meanwhile, as modernist culture can be said to be relatively rigid, with discrete cultural phases and movements in music, art, literature and architecture – which permit critics to subsequently judge them by a generic “master code” (Harvey, 1990: 44) – being clearly identified or delineated. The inherent fluidity of postmodernism precludes such delineation, resulting in the playful appropriation and bricolage of styles (see Hassan, 2003: 4) to the disquiet of some (see Harvey, 1990, below).

Foster highlights two ‘styles’ within postmodernism, both of which continue to pertain to the car as avatar and/or artefact: one a ‘style-focused’ neoconservative postmodernism, which employs “an eclectic historicism” (1984: 67) to mix old and new styles which manifests as the representational or cultural postmodernism many may think of first, and the other a poststructuralist postmodernism which is perhaps more textual and concerns itself with “the regimes of meaning and order” (*ibid*: 73) behind cultural representations, of which, following Bayley (1986), the car is a powerful example (see 2.3). He perhaps captures the spirit or purpose of postmodernism exactly when he suggests that “if the ‘essence’ of modernism is to use methods of a discipline in order to ‘entrench it more firmly in its area of competence’, then the ‘essence’ of postmodernism is to do the same but in order, precisely, to subvert the discipline” (1984: 75), and although he made this suggestion with reference to postmodern art, it can be applied more widely, to economic (e.g. Nealon, 2012; Harvey, 1990) and consumption spheres (see 2.3).

Glennie and Thrift (1992) suggest that there are three consumption-related ‘processes’ that mark out the postmodern. Firstly, a “widening net of commodification” (*ibid*: 423) which ingratiate itself into our social lives, replete with consumptive semiotica and which not only compels us to consume, but may also instigate “processes of self-actualisation” (*ibid*.). The second process pertains to the constant changes and fragmentations – the ephemerality – of signs and images of goods and commodities that represent social divisions wrought by tensions resulting from such semiotic

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ephemerality, with such expressions of ‘taste’ subsequently conferring a status upon those who own the goods/commodities in question (*ibid.*). The third process concerns the emergence of a “more reflexive and more aestheticised” (*ibid.*; 424) quotidian, necessitating spaces to both display and inform expressions of consumption (*ibid.*). Glennie and Thrift state that these processes combine “to form a narrative history of modern consumption” (*ibid.*) and which, for our purposes, act as key components of the consumption of the car.

Jameson (1984) notes that one the tenets of postmodernism is that consumption is of more significance than production (also see Alvesson, 2002), and this observation is very much borne out, in a literal sense, by the car industry. For example, the Citroën C3 Picasso, a car which may be seen as quintessentially French (Fountain, 2009), is actually built by PSA at their plant in Trnava in Slovakia (PSA, 2010); similarly, just how ‘British’ would BMW’s Mini be perceived to be if were built in Germany instead of the UK? Such observations and questions suggest that, for our purposes, the car perfectly illustrates the change from industrialism to postindustrialism (or from Fordism to post-Fordism) and also the change to postmodern culture, manifesting as ‘niche’ consumption (see Gartman, 2004) and production, exemplified by an increasing proliferation of niche models – invariably produced on modular platforms utilised by more mass-produced models – and, following Foster (1984), by the innate bricolage of contemporary models which hark back to a manufacturer’s iconic models of the past, such as the contemporary VW Beetle, Fiat 500 and BMW Mini mentioned in 2.3, and also the way that our regard for a car may subvert its manufacturer’s intentions.

However, while Elliot notes that “[p]ostmodernism no longer enjoys the cultural and political cachet it once did” (2009: 262), Nealon goes further, suggesting that “postmodernism has seemingly been lingering at death’s door, refusing to pass definitively, for some time” (2012: x) and, as such, its tenets are perhaps still of relevance today. Having been the pre-eminent sociological thought in the latter part of the 20th century, postmodernism hasn’t found such favour in the 21st century (Matthewman and Hoey, 2006), disappearing from academic debate and frequently appearing in literature searches preceded by the word ‘after’ (*ibid.*). It is perhaps appropriate that a concept characterised by “fragments, hybridity, relativism, play, parody, pastiche, an ironic, sophisticated stance, an ethos bordering on the kitsch and

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camp” (Hassan, 2003: 4) should now have the prefix ‘after’ – a post-postmodernism (Nealon, 2012), if you will. As if to complicate matters, Brown (1997) suggests that “there is no such thing as *the* postmodern, since there are almost as many ‘postmoderns’ as there are postmodernists” (1997: 174-175); that said, it is perhaps an innate part of the postmodern remit to posit multiple postmoderns, as if to say ‘this is my truth, tell me yours’. Indeed, Brown goes on to state that these many postmodern schools “are not clear cut identities” (*ibid*: 175) but, given the nature of postmodernism, it can be argued that nor should they be.

A noted contemporaneous critique of postmodernism was posited by Harvey (1990) who felt that there was a chaos to postmodernism that made the move towards it difficult to explain, certainly in comparison to more modernist sensibilities. Rather than seeing it as a disparate critique, though, Harvey regards postmodernism as a crisis in – and so a continuity from – modernism, albeit a crisis that espouses fragmentation and decries immutability. He questions postmodernism’s ultimate power or benefit, in that given an apparent insistence on fragmentation rather than an acknowledgement of differentiation, he ponders how it can permit aspirations to “act coherently with respect to the world?” (*ibid*: 52), a question pertinent to addressing the environmental imperative (see 3.3). He maintains that “metatheory cannot be dispensed with” (*ibid*: 117) and claims that a fragmentary, ‘depthless’ postmodernism, with its ‘nihilistic deconstruction’ and an emphasis on the aesthetic and the textual “takes matters too far” (*ibid*: 116) in its critique of modernism, potentially leading to unintended consequences by disempowering the disenfranchised voices it is meant to liberate “in a world of lop-sided power relations” (*ibid*: 117). While he admits that much modernist thought and process is fixed, Harvey claims it is “ranged around a social and economic project of Becoming” (*ibid*: 339), a progressive project perhaps incompatible with the innate instability of postmodernism. Indeed, for Harvey, postmodernism goes beyond rational, reasoned politics and, where economics is concerned, into the realm of “reactionary neoconservatism” (*ibid*: 117), and subsequent economic events would suggest that Harvey’s fears have been borne out.

For our purposes, with regard to representational and textual matters, Harvey notes the deconstructionist tendencies of postmodern/poststructural thought, whereby “cultural life is viewed as a series of texts intersecting with other texts, producing more texts”

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(*ibid*: 49) and acknowledges that “both producers and consumers of ‘texts’ (cultural artefacts) participate in the production of significations and meanings” (*ibid*: 51), thus permitting us to “recombine” (*ibid.*) or consume them as we wish, a notion which underpins where ‘here’ is with regard to the sociocultural consumption of the car. As with his overall critique, though, he again contends that such potential textual insights are grounded within modernist sensibilities, this time citing a direct link to surrealist art.

That said, Harvey’s notion of postmodernism as a continuation of modernism has echoes in the unconscious/ness of postmodernism/poststructuralism, specifically in the observation that both structuralism and a subsequent poststructuralism are grounded in Freud’s work on the unconscious, which posits a framework to explore the determining of human action (Cuff *et al*, 2006), although any adherence will be to differing degrees since a poststructural unconscious doesn’t follow some of the Freudian detail therein, therefore avoiding any inherent stricture (Williams, 2005). Treading a similarly ‘less-than-conscious’ path, Shawver posits how to “postmodernize the Unconscious” (1998:386) by appropriating Derrida’s ‘*différance*’ – the space whereby the instantaneous, fleeting, ephemeral, evolving outcome of what ‘is’ that permits “the movement of signification” (Derrida, cited in Royle, 2003: 72) occurs – and a Lyotardian paralogy whereupon “the Unconscious becomes all the ideas that we can uncover paralogically” (*ibid*) and so drive postmodern ways of ‘knowing’, while Stinchcome and Heimer say that postmodernism and poststructuralism indicate “a subconscious but socially learned aura to the components of a text” (2000: 309), something that necessarily resonates with any perceived (or otherwise) representationality associated with the motor car, and any subsequent (re)actions thereon.

One version of, or alternative approach to, postmodernism was the ‘liquid modernity’ posited by Bauman (2000), who suggests that, far from being ‘fixed’, modernity was always metaphorically ‘fluid’ and has recently has become more so politically, economically and societally. In this modernity, which appears counterintuitive to conventional, fixed notions of modernity, Bauman posits a “melting of the solids” (2000: 4), an ‘individualised’ modernity, in which societal bonds and relations are vulnerable to a “business-shaped criteria of rationality” (*ibid.*), leading to an economic

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order seemingly freed from “traditional political, ethical and cultural entanglements” (*ibid.*), perhaps with the power to subvert (Foster, 1984) such entanglements. Bauman notes that this ‘rationality’, attendant with a ‘light’ capitalism – which would appear to supersede a ‘heavier’ modernist economic order which previously “found a way to control and contain an explosive capitalism” (Harvey, 1990: 115) – renders people “*a priori* inferior” (*ibid.*; 166 – original emphasis) to globalised capital, leaving them vulnerable to “even more bewildering ‘market forces’, ‘terms of trade’ and ‘demands of competition’” (*ibid.*). It is suggested that such a notion, concomitant with neoliberal ideology and redolent of a late capitalism which has “intensified into the ‘just-in-time’ ... capitalism of our neoliberal era” (Nealon, 2012: xi), is in conflict with that of a more pressing sustainable order, one possessed of a ‘triple bottom line’ (Elkington, 1999) which affords concern for society and for the environment, in addition to economic rationale. In addition, while the observations of Glennie and Thrift (1992) and Harvey (1990) may pertain more to the socio-cultural consumption of the car *per se* than does Bauman (2000), it is interesting to ponder, with chapters themed upon the impact of this liquid modernity regarding ‘emancipation’, ‘individuality’, ‘time/space’ and ‘work’ (ergo capital), whether this modernity might carry echoes of the global social and economic impacts of the rise of the automobile, for example talk of an individualised modernity being concomitant with an increasing automobility and the privacy it affords (Graves-Brown, 1997 – see 2.3), or of a globalised and mobile car industry.

So was postmodernism a crisis within modernism, as Harvey (1990) claims or, as Hassan (2003) suggests, something more radical, playful and fragmentary? I would contend that it is both, in that while Bauman’s liquid modernity (2000) may represent Harvey’s postmodern crisis within modernism regarding capital (and one which necessarily has implications for the environment – see 3.3), it is also the cultural fragmentation espoused by Hassan but denied by Harvey, with Derrida’s *differance* marking the point of this fragmentation, where the reading, the consumption, of a text – for our purposes, an automotive text with its own environmental ramifications – becomes our own.

As it can be regarded as still apposite with regard to matters of consumption and capitalism, why did postmodernism fall from fashion? One reason cited for its decline was the hoax article ‘Transgressing the Boundaries’ (Sokal, 1996), a treatise replete

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with meaningless neologisms written by scientist Alan Sokal to discredit postmodern thought in a positivist rebuke for the misappropriation of scientific terms to advance social theory (Matthewman and Hoey, 2006). In another attack on postmodernism, this time from within humanities, the “promiscuous neologism” (Sui, 1999: 405) of postmodernism is pointedly described as “neolorrhea” (*ibid*). Sui goes on to describe postmodernism as “a deadly virus because of the postmodernists’ assumed or implied ontological relativism, epistemological nihilism and methodological neologism” (Sui, 1999: 408) which caused him to fear for the future of geography itself, claiming that geography would be best protected by “rationality, reason and science” (*ibid*, 409). However, critics such as Sui seemingly failed to recognise the ‘human’ in human geography, and the fact that the individual agency that we all have and subsequently perform based upon our various knowledges, cannot necessarily be measured empirically or scientifically (see Alvesson, 2002). Indeed, Lyotard notes that “knowledge is not the same as science” (1984: 18) because “the term *knowledge* is not only a set of denotative statements ... [it] is a question of competence that goes beyond the simple determination and application of the criterion of truth” (*ibid* – original emphasis). According to Lyotard, knowledge also “includes notions of ‘know-how’ ... [*savoir-faire*...]” (*ibid.*), and so it is therefore not merely denotative, but also connotative; that is to say, being possessed of a ‘*savoir*’, knowledge is not merely scientific, but also narrative (*ibid.*) and so has implications for how goods and artefacts such as the car are regarded or consumed (see 5.4, 5.5 and 6.4). In addition, the ‘promiscuous neologism’ critiqued by Sui and employed as a weapon by Sokal perhaps illustrates that positivist academia may have failed to appreciate that new ways of thinking will inevitably lead to new expressions to convey such thought and, as theory continues to evolve, so do expressions. Indeed, one only needs to consult revised editions of dictionaries to see that contemporary society is profuse with neologisms.

However, the Sokal episode wasn’t the death knell for postmodernism. Nor should it have been, with not only an apparent failure to appreciate neology as valid, and not merely promiscuous, but also with so many voices to be heard, and still *yet* to be heard. Indeed, it can be argued that if postmodernism’s cause célèbre was the rejection of metanarratives and the embracing of a plurality of truths in which everyone has something to say, then postmodernism is actually still relevant in a 21st century multimedia society, where discourse isn’t limited to academia – literally everyone has

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something to say and, with the rise of social networking and the ‘blogosphere’, has the chance to say it. Indeed, it can also be argued that postmodernism still has metanarratives to critique, such as the ever-burgeoning middle ground of politics in which politicians seem to say the same things differently (and perhaps even the consensus surrounding the environmental imperative itself – see 3.3), and is utilising the blogosphere to express such critiques.

And yet, Matthewson and Hoey suggest that the very technology facilitating such a multiplicity of truths has actually advanced the fall of postmodernism, claiming that while the characteristic fluidity, instability, fragmentation and identity mediation of postmodernism “once shocked” (2006: 542), today “they are but a login away” (*ibid.*). However, while it may be true that a familiarity with postmodernism has bred contempt, that doesn’t necessarily mean that the postmodern rhizome has withered and died. Harvey’s concern regarding a ‘reactionary neoconservatism’ is seemingly prescient given the effects of a 21st-century capitalism that has been intensified simply “in order to generate more capital” (Nealon, 2012: 26) as opposed to producing capital via the provision of “tangible goods and services” (*ibid.*), echoing Bauman’s liquid modernity (2000), and suggesting that the tenets of postmodernism pertaining to capital are still being keenly felt today as a result of a more stable economic order (Harvey, 1990) being ‘subverted’ (Foster, 1984). Elliott (2009) suggests that while contemporary political issues and global concerns present sociology with alternatives to postmodernist theory, postmodernism could be applied to such issues; however he makes this suggestion without elaborating further as to what such issues may be, though possible pressing concerns and issues would be the capital issues noted above, as well as the environmental imperative (see 3.3).

Another reason why postmodernism may have fallen off the academic radar is that it had served its initial purpose. Metanarratives challenged and duly vanquished, as exemplified in the 21st century by the blogosphere, postmodernism consolidated an imperious position as the social theory *de nos jours*. However, a familiarity (if not universal acceptance) may have bred contempt for a once shocking, but now mainstream, ethos. And yet postmodernism can still be regarded as relevant; in a consumer society, for example, a Baudrillardian postmodernism concerned with signs and semiotics can be said to be especially relevant and, indeed, Glennie and Thrift note

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that people have used consumer goods to construct identities and create a “sense of self and other” (1992: 434) for around three centuries (*ibid.*) and it is suggested that they continue to do so. This is certainly so in the case of a consumer good that is emotive as well as functional, such as that produced by the car industry.

The notion that a car carries meanings as well as people (Gabriel and Lang, 2006) means that a hermeneutic approach is called for as the construction of such meanings demands that the car be regarded as a form of text (see Holden, 1998; Bulgin, 1993). Following the observation concerning “the difference between a book and a text; the first is produced by a publisher, the second is produced by a reader” (Storey, 2006: 175), the nature of the subsequent data collated by the methods detailed in chapter 4 will be inherently fragmented and far from fixed or scientific. The respective feelings and meanings that respondents may (or may not) assign to their cars are intrinsically interpretative in nature, as there are no rules or formulas as to how one should view ones car and no numbers that can explain how and why one does so. As the nature of respondents’ interpretations will themselves be subject to interpretation, and not measurement, any findings resulting from the data collection will essentially be composed of narratives *constructed* from respondents’ *interpretations* of automotive texts.

3.3 Postmodernism, the automobile and the environment

There are two reasons for appropriating a postmodernist epistemology, despite an apparent fall from sociological favour (e.g. Matthewman and Hoey, 2006 – see 3.2). For our purposes, postmodernism – acting as a poststructuralist rhizome – is primarily appropriated as a means to assess where ‘here’ is with regard to the consumption of the car, that is to say, the representational nature of the car as consumer and cultural artefact. However, it is also argued that because the resource demands we make of our planet are grounded in modernist ideology (Bordessa, 1993), the environmental imperative requires us to re-embrace a postmodernist agenda. The notion that man has dominion over an earth which we must use for our own ends has perhaps led us to become detached from nature and, in doing so, we can forget that by exploiting the planet in such a manner, we actually have an environmental impact; the impact of the car, for example, has been enormous physically, socially and environmentally. Yet by allowing modernist environmental sensibilities to go unchallenged, we condone a

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‘business as usual’ approach to the environment, perpetuating an extant “neoliberalism where the whole planet is understood as an economic arena” (Dalby, 2007: 104; also see Bakker K, 2010), a political and economic hegemony which has long practised an un-sustainability with scant regard for Elkington’s ‘triple bottom line’ (Elkington, 1999 – see 3.2).

To develop the suggestion posited by Elliott (2009) that postmodernism could be appropriated to contemporary global concerns (see 3.2), one example of a global issue upon which postmodernism may have something to say about is the environment. Just as Harvey (1989) suggested that postmodernism began in the early 1970s, it has also been suggested that the environmental movement began at “Earth Day 1970 ... a modest proposal for a national teach-in on the environment” (Hannigan, 2006: 1). Such timing implies that environmentalism and postmodernity are truly contemporaneous movements. While the subjects of postmodernism and the environment have previously been the subject of some discussion (Bordessa, 1993; Blaikie, 1996, Gandy, 1996), such discussion is surprisingly scarce, given the contribution postmodernism can make to environmental discourse. It has been suggested that the way postmodernism has ignored the environment means that “postmodernism still appears ecologically underdimensioned” (Coope, 2008: 78). The absence of such discussion does not necessarily mean that such discussion is intellectually invalid; for example, Gandy (1996) presents a table charting the ‘characteristics of the postmodern condition’ and ‘areas of intersection between postmodern and environmental discourses’ to illustrate this point, and it seems that postmodernism actually has a lot to say about the environment. This notion is supported by Coope’s observation that “postmodernism and radical ecology share many themes ... they both question ‘rationality’, ‘reason’ and ‘progress’” (Coope, 2008: 78). It is therefore perhaps surprising that a literature search with any combination of the words ‘environment/al’ and ‘postmodern/ity/ism’ in the title returns very few relevant articles, until we realise that the contribution that human geography, as a discipline, can make to environmental discourse is seemingly still under consideration (O’Brien, 2010).

Why postmodernism, an epistemology that has seemingly fallen from favour? In a strident environmental critique of modernism, Bordessa (1993) notes that a modernist epistemology, rooted in Cartesian reason, has previously legitimised Man’s exploitation

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of nature. This exploitation was morally acceptable because of the way that science institutionally proclaimed the nature of nature and the subsequent material progress made has cemented this view, even today. Bordessa also says that, conversely, a postmodernist epistemology necessarily denies our apparently inalienable right to use nature for our own ends and, in an apparent call to arms, he sees postmodernism as a ‘survival form’, a way to view nature from a moral, rather than an economic or political perspective. The innate anthropocentricity of modernism contrasts with a postmodernity possessed of an ecocentrism that is a reaction to the treatment of nature by modernist sensibilities, and grounds the political and economic hegemony which still exists, prompting disquiet about global corporationalism (*ibid*).

Blaikie (1996) sounds a more cautionary note. He acknowledges that the way that postmodernism challenges the teleological metanarratives of modernism, and how its innate social construction of knowledge challenges “the privileged status of scientific knowledge” (1996: 82). By appropriating a “neo-populist developmentalism” (*ibid*: 83), grounded in localised environmental knowledge, postmodernism justifiably lays claim to the environment debate due to the fragmented nature of the sentiment ‘think global, act local’ (*ibid*: 84), leading to a flexibility in the application global environmental policies and agendas, exemplified in the differing local quotas applied by the 1997 Kyoto treaty. However, he also suggests that, as part of the environmental debate, science (*et ergo* modernism) should still play a role due to the activities of multinational organisations for whom there is no contest of the meaning of nature, and so have a huge impact upon the environment. As Blaikie claims that this discourse is beyond that of postmodernism, yet still crucial in the environmental debate, he seems to suggest that a modernist scientific epistemology can challenge a postmodernist environmental philosophy.

To a degree, he is correct. It is not just localised experiences, for example in the developing world, which have highlighted climate change; science has provided empirical data to document it (see IPCC, 2007) and so has a crucial part to play in environmental discourse. But if climate change is indeed anthropogenic – and it has been claimed that we are living in what may be termed as the ‘anthropocene era’ (Crutzen and Steffen, 2003) or a ‘carbon age’ (Bridge, 2011) – then the actions of a culpable consumer society demand that postmodernism is much better placed to assess

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the impacts of any claimed anthropogeneity and the rationale behind them. It has long been clear that we cannot continue to adopt traditional disparate human/physical geographical thought in regarding separate environment and humanity if we are to address the environmental imperative (Dalby, 2008) and, in considering the environmental impacts of ‘consuming’ the car, this study aims to bridge the human and physical geographies (see 3.6).

Gandy (1996) expresses similar concerns, in that he highlights the debate between the postmodern and modernist views of nature, and also acknowledges that science can complement postmodernism in environmental discourse. As an early plea for social sciences to embrace environmental issues, he suggests that if questions such as those regarding the culpability of modernism in environmental degradation or the place of postmodernism in sustainability are not dealt with by geographers, then other disciplines will surely fill the breach. Nearly fifteen years on, human geography’s appraisal of the environmental imperative (see O’Brien, 2010) means that it looks as if Gandy’s plea may have been finally heard.

In assessing the influence of postmodernism on environmental politics, Seippel (1999) makes the distinction between postmaterialism and postmodernism, and a further case between humanistic and individualistic postmodernism. While doing so, he paints the postmodernist in a less than flattering light compared to the postmaterialist, presenting the postmodernist as somewhat flighty and ephemeral, and the postmaterialist more grounded and stable, stating that “while the postmaterialist is out to realize himself, the postmodernist is merely out to express himself” (Seippel, 1999: 134), concluding that postmodernism may be politically relevant in an environmental context, as long as not much is asked in terms of action. This inherent depthlessness, coupled with postmodernism’s innate ephemerality, a sentiment also noted by Hassan (2003), forces Seippel to conclude that a more overtly individualistic postmodernism can actually hinder support for environmental movements. Such a conclusion may provide one explanation as to why little has been made of postmodernism and the environment thus far (see Coope, 2008).

This is unfortunate, especially in light of the certainty of Bordessa (1993), and the strong case made by Gandy (1996). As to how this may be remedied, it may be possible

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to explore Seippel's (1999) claim, above, that postmodernism is interested primarily in expression, and not realisation. The modernist metanarratives which have historically locked us into the dominant political and economic hegemony (Bordessa, 1993) necessarily promote a 'business as usual' approach regarding the environment. If we are to embrace sustainable development, and adopt a more benign approach to the environment while maintaining lifestyles and living standards now and for the future (see WCED, 1987), we may need to adopt a more postmodern ethos as suggested by Gandy (1996). If the modernist environmental epistemology has indeed foisted a 'business as usual' mindset upon us, say by means of a locked-in carbon dependency (see Black, 2006) or through the short term costs of adopting renewable technologies, might it be true to suggest that the 'business as usual' policy stops us expressing ourselves environmentally? If we can find the confidence to unlock ourselves from carbon dependency, we might be able to appropriate Seippel's observation and begin to truly approach a postmodern environmentalism, or an environmental postmodernism.

Indeed, environmental discourse can re-energise postmodern debate, not only because of their contemporaneous rise, but also because aspects of the epistemological intersection of postmodernism and the environment noted by Gandy, namely "rejection of Cartesian dualism and debates over the role of modernist science in environmental destruction, suspicion towards technology and universalist forms of rationality [and the] influence of new scientific ideas such as anti-chaos and post-Darwinian evolution on the Gaia hypothesis and postmodern scientific formulations" (1996: 25), mean that the age of postmodernism might also be regarded as a period of environmental awakening.

And yet there is a philosophical tension regarding postmodernism and the environment, in that a wide ranging consensus regarding anthropogenic climate change (e.g. Cook *et al*, 2013) might also be regarded as a meta-narrative in itself, and therefore something for postmodernism to critique. How can this be, and how can this tension be reconciled?

To answer this, we need to consider what constitutes 'knowledge'. Note was made in 3.2 as to how Lyotard posits the difference between denotative (scientific) and connotative (narrative) knowledge, whereby our own individual notions of *savoir* thus

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beget the ‘pragmatics’ of narrative knowledge. For Lyotard, scientific knowledge is possessed of three ‘pragmatic posts’ – “sender, addressee, and referent” (1984: 23) – complete with ‘tensions’ to determine the scientific nature of a given statement. Initially, Lyotard says, “the sender should speak the truth about the referent” (*ibid.*) which, for our purposes, we can read as ‘climate scientists should speak the truth about anthropogenic climate change’. Then, Lyotard states, “it should be possible for the addressee validly to give (or refuse) his assent to the statement he hears” (*ibid.*), that is, we can believe or disbelieve scientists’ claims regarding anthropogenic climate change. Finally, “the referent ... is supposed to be ‘expressed’ by [a] statement in conformity with what it actually is” (*ibid.*), a notion rendered problematical by the question of “what proof is there that my proof is true?” (*ibid.*: 24).

The solution to this question, according to Lyotard, rests on two ‘rules’, one “dialectical ... [in that] a referent is that which is susceptible to proof and can be used as evidence in a debate” (*ibid.*), and another that is “metaphysical; the same referent cannot supply a plurality of contradictory and inconsistent proofs” (*ibid.*). When it comes to the debate surrounding anthropogenic climate change, it can be suggested that the rules to which climate science is subject pertain respectively to measured data, such as atmospheric CO₂ concentrations, air/ocean temperatures, glacier mass, or levels of ocean acidification (e.g. IPCC, 2007), and apparent contradictions, such as a reported global warming ‘pause’ (Hawkins *et al*, 2014), arising from the measured data.

Following Lyotard’s ‘rules’, it is suggested that such data and apparent contradictions surrounding the climate debate lay the foundations for any tensions between scientific and narrative knowledge thereon, in that although “the referent is in principle external to the partners engaged in scientific dialectics” (*ibid.*: 26), Lyotard notes that “drawing a parallel between science and non-scientific (narrative) knowledge helps us understand, or at least sense, that the former’s existence is no more – and no less – necessary than the latter’s” (*ibid.*), since own ‘narrative’ reflects our ‘understanding’ of the climate data with which we are presented.

As such, the conflict in the climate debate, and any notions of an environmental-imperative meta-narrative, might be grounded in Lyotard’s claims that “it is ... impossible to judge the existence or validity of narrative knowledge on the basis of

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scientific knowledge and vice versa: the criteria are different” (*ibid.*). Indeed, Lyotard notes that while narrative knowledge “certifies itself in the pragmatics of its own transmission without having to recourse to argumentation and proof” (*ibid.*: 27) the reverse does not follow, in that, unlike science “the validity of narrative statements ... are never subject to argumentation or proof” (*ibid.*). This “unequal relationship” (*ibid.*) between scientific and narrative knowledges provides the essence of the climate debate.

So how can postmodernism address its existential quandary of simultaneously critiquing a modernist environmental culpability (e.g. Bordessa, 1993; Gandy, 1996) while fostering an approach to ameliorating an environmental imperative that perhaps represents a meta-narrative in itself? Hinting at Harvey’s (1990) claims that postmodernism is merely a crisis within modernism, Gare claims that postmodernism’s lack of faith in grand narratives has actually “revealed the importance of narratives for the constitution of subjects, organisations and societies” (1995: 139) and suggests that the creation of narratives and stories can assist in the identification and potential amelioration of environmental issues. Following Bakhtin’s appraisal of Dostoyevsky (1984), he posits “a polyphonic dialogical narrative in which a multiplicity of perspectives are represented, where through dialogue the narrative reflects on its own development” (Gare, 1995: 140). Although it is claimed that such an approach constitutes “a modernist project in postmodern clothing” (Blaikie, 1996: 84), Gare maintains that such a narrative would differ from previous meta-narratives, which he suggests were “oppressive ... essentially ‘monological’ narratives in which all participants were subordinated to the role of one, non-reflexive perspective” (Gare, 1995: 140), as it could permit a “diversity of cultures and the multiplicity of local stories by which humanity has formed and is forming itself” (*ibid.*) which, as noted above, would imbue any overarching standpoints with a reflexive impermanence, resulting in a grand narrative grounded in “an alternative cosmology” (*ibid.*: 141) to that based on Roman/Platonic/Hebraic thoughts and philosophies which emerged during the Enlightenment (*ibid.*) – the like of which were noted by Bordessa (1993) and Gandy (1996) – and can be said to ground the ‘think global, act local’ meme.

Despite its apparent disappearance from human geographical and sociological discourse, postmodernism can still be regarded as epistemologically valid regarding the contemporaneous consumption of the car. This is not only because of the role of the car

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industry as heritage bricoleur or the consumer appropriation of the car as avatar (or not, as the case may be) and/or as a wider automotive text. It is also because a postmodernist epistemology is apposite regarding the environmental imperative, in respect of its critique of, and opposition to, a modernist rationale which contends that the earth is to be exploited for our own ends, and also because of the commonality between postmodern discourse and the environment, upon which postmodernism has much to say. Together with an affectual or non-representational epistemology, postmodernism plays a key role in assessing the holistic consumption of the car and its impact upon the environment.

3.4 Affect and non-representational theory – feeling and performing the consumption of the car

In keeping with the notion of automobility, Thrift notes that “it is possible to argue that human life is based on and in movement” (2008: 5) and that, ultimately, “movement captures a certain attitude to life as potential” (*ibid.*). For our purposes, as a means to capture this attitude, non-representational theory takes the notion of movement or mobility and “works with it as a means to go beyond constructivism” (*ibid.*). Therefore, while enlisting a postmodern epistemology as part of a constructivist ontology, we can augment this ontology by enlisting an affectual and/or non-representational epistemology as part of an animist ontology (see figure 3.1).

There perhaps needs to be some connection between postmodern and affectual epistemologies if we are to utilise them in assessing the consumption of the car. Such a bridge is provided by Slovic *et al* who note that “[a]ffect, attached to images, influences judgements and decisions” (2007: 1342).

3.4.1 Affect – innate ordinary intimacies

The notion of affect is rooted in the work of the 17th century philosopher, Benedict de Spinoza. Scruton (1999) provides a brief overview of Spinoza’s *Ethics*, in which he summarises Spinoza’s work on emotions which contends that emotion, or *affectus*, “is a bodily condition and, at the same time, the idea of that condition” (Scruton, 1999: 32); in other words, is not only the change of the power of our actions, whether this power is increased or decreased, but it is simultaneously the notions of these changes. In the

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third part of his *Ethics*, Of the Origin and Nature of the Affects, Spinoza's first definition of affect (D1) states that

“I call that cause adequate whose effect can be clearly and distinctly perceived through it. But I call it partial, or inadequate, if its effect cannot be understood through it alone” (Spinoza 1996 [1677]: 69 – original emphasis).

Scruton says that, in this definition, Spinoza regards “causation [as] another name for explanation” (1999: 32), as in our use of the word ‘be-cause’. For Scruton, this means that “knowledge of the effect follows knowledge of the cause” (*ibid.*), a notion which not only implies that emotion follows affect, but can also be said to be an important component of the ‘knowledges’ (e.g. Lyotard, 1984) we apply as consumers.

Spinoza further qualifies affect in his second definition (D2) by saying that

“we act when something happens, in us or outside us, of which we are the adequate cause, that is (by D1), when something in us or outside us follows from our nature which can be clearly and distinctly understood though it alone. On the other hand, I say that we are acted upon when something happens in us, or something follows from our nature, of which we are only a partial cause” (Spinoza 1996 [1677]: 70)

and his third, and final, definition (D3) in that

“by affect, I understand affections of the body by which the body's power of acting is increased or diminished, aided or restrained, and at the same time, the ideas of these affections.

Therefore if we can be the adequate cause of these affections, I understand the by the affect an action; otherwise a passion (ibid. – original emphasis).

For Scruton, these definitions of “action and passion” (1999: 32) are such that we are “active in respect of things that are fully explained of [our] own nature, passive in relation to things that must be explained by external causes” (*ibid.*), and so it would appear that – derived from the respective Latin (the language in which Spinoza wrote) definitions of ‘action and passion’ as ‘to drive’ and ‘to suffer’ – we are happier when

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we are fully in control of what happens to us, or even around us, and less so when we are not.

From Spinoza's musings comes another, more concise, definition of affect from Deleuze and Guattari (2004), whereby they claim that "neither word [affect or affectation] denotes a personal feeling" (2004; xvii); rather, following Spinoza's *affectus*, affect is the "ability to affect or be affected" (*ibid*), whereas following Spinoza's *affectio*, affectation is defined as "each state of such affect between the affected and affecting bodies" (*ibid*).

Following both Spinoza (1996 [1677]) and Deleuze and Guattari (2004), it seems that we are possessed of our own essence, our own nature, with a capacity to affect and to be affected – our own *affectus* – and that adequate and inadequate causes stem from what is innate and essential to us, authentic even, resulting in a potential or latency of affecting or being affected. However, as we shall see later, the idea of being possessed of an affective essence or nature isn't merely limited to the human.

Further to the latency of our affecting or our being affected, Stewart writes of the potentiality of affect, noting that "the potential stored in ordinary things is a network of transfers and relays" (2007: 21), suggesting an innate 'flow' between affecting and affected bodies that is borne of knowledges and nature, leading to an affectual potentiality that is "immanent to fragments of sensory experience" (*ibid*) as quotidian banality "throws itself together out of forms, flows, powers, pleasures, encounters, distractions, drudgery, denials, practical solutions, shape-shifting forms of violence, daydreams and opportunities lost or found" (*ibid*: 29) and manifests itself as the ordinary automotive intimacies cited by Samuels (2002: 52 – see 2.1). Such sensory immanence resonates with a pertinent – for our purposes – definition of affect from Massumi, who notes that affect "is the virtual as point of view ... for affect is synesthetic, implying a participation of the senses in each other ... [an] ... ability to transform the effects of one sensory mode into another" (Massumi, 2002: 35); he goes on to suggest that the most obvious examples of this are tactility and vision, which are key components in how cars are driven and/or piloted.

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However, the notion of seemingly simple and/or discrete definitions of affect is countered, and subsequently expanded upon, by Thrift (2004). As is (or was) the case with postmodernism (see Hassan, 2003; Brown, 1997), Thrift notes that there is no exact definition of ‘affect’, as affect has many meanings (2004), and postmodern parallels don’t end there as Wetherell argues that “human affect is inextricably linked with meaning-making and with the semiotic (broadly defined) and the discursive” (2012: 20). Ruddick notes that such is the complex nature of Spinoza’s *Ethics* that “it lends itself to varied and antipodal readings, depending on the interpretation, inflection and amplification given to various statements” (2010: 24); indeed, her observation that “each era has produced its own inflected readings of Spinoza” (*ibid.*: 22) suggests an ‘affect’ of the times, as if contemporaneity is an affect in itself. The multiple meanings of affect are hinted at the many instances of affect listed by Lorimer, such as “... the dance floor pulses ... once hope had evaporated, there was some sort of release ... he held the room ...” (2008: 552), whereby “life takes place with affects in its midst; or, more radically, how life is composed in the midst of affects” (*ibid.*). In an effort to provide some clarity, Thrift (2004) provides four possible definitions.

3.4.1.1 Embodied practices, outer linings

The first of these definitions is that affect is “a set of embodied practices that produce visible conduct as an outer lining” (2004: 60). If we take the car as this ‘outer lining’, then this definition appears most relevant for our purposes; however, Thrift goes on to suggest that understanding a “richly expressive/aesthetic feeling-cum-behaviour of continual becoming” (*ibid.*) is rendered problematic by an issue which he says has previously beset emotional sociology – the notions of decontextualisation and representation. Such tension, he says, is due to the fact that emotions emanate from outside the self, and that “emotions are largely non-representational” (*ibid.*); however, they are necessarily manifest, or represented, as illustrated in the difference noted by former BMW design chief Chris Bangle between an automobile and a car (TED, 2007 – see 2.3). In addition, Spinoza notes that our actions are a result of what happens within us or outside us, and the context will inevitably influence how we act; for our purposes, this context could be the car that motorists drive, the traffic in which it is driven, or the actions of other drivers. Insofar as the non-representationality of emotions is concerned, then affect – if not representation – can be said to be the ‘presentation of representation’ (see McCormack, 2003 below); I shall touch on the non-representational later.

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3.4.1.2 A driven authenticity

In his second definition, Thrift briefly suggests that affect may be somewhat self-referential, citing the Freudian claim that a libidinous or desirous drive is the source of motivation and identity, in turn citing Silvan Tomkins' assertion that the Id and the Unconscious are key components of affect (Thrift 2004: 60), though he expresses misgivings about the severity of a definition which "reduces affect to drive" (*ibid*: 61), saying that it "may be too stark" (*ibid*); indeed, such musings may be in danger of taking human geography away from the realms of philosophy, and rather too close to the field of psychology for comfort. Tomkins himself notes a difference between drive and affect, saying that "the drive system is ... secondary to the affect system" (Tomkins, 2008: 13) because "the motivational power of the drive system is borrowed from the affect system" (*ibid*) which, in turn, acts "as an amplifier for the drive signal" (*ibid*).

From this definition, the reason for the power possessed by affect over that possessed by drive must lie in the fact that the former has a wide psychological potential, whereas the latter has a narrow physiological remit. As an example of a physiological manifestation of a psychological impulse or feeling, Tomkins regards the face as "a primary organ of affect" (*ibid*: 123), with Thrift describing the face as "affect in process" (Thrift, 2004: 61). Similarly, if we can regard the car, in its role as representation or avatar, as an 'organ of effect', then we can describe the manner in which the car is used as 'affect in process'. Despite Thrift's unease with a Freudian theory, it nonetheless ties in with Spinoza's observation that our 'essence', or our true meaning or self, lies in the way in which we endeavour to be or find ourselves, and that when such endeavour "is related to the mind, it is called will: when related to both the body and the mind, it is called appetite. Desire is the appetite together with the consciousness thereof" (in Scruton, 1999: 34). From this definition, Scruton concludes that "desire is the very essence of man" (*ibid*) and that any joy we feel depends upon how our desires are satiated or otherwise. For our purposes, this definition of desire may also explain why some motorists see the car as merely as a form of necessary or convenient transport, whereas others see the car as something more.

In addition, I would contend that the notion of essence can be applied to the car; that is a car can have a true meaning or self. Such an automotive essence, or meaning or self

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can be as a result of the freedom and flexibility afforded by the motor car in general and the resultant autonomy it brings, or borne of the values concomitant of the design and engineering of a particular car. At a more existential level, the essence or nature of a particular make or model of car can even go beyond the what or how it has been engineered, and pertain to the *why* it has been designed and engineered, that is, the authenticity of a car. The transition to a low carbon automobility means that the what, how and why of such an automotive essence or self might necessarily be different to what is currently accepted as the essence of the, or a, car.

3.4.1.3 Ephemeral encounters

Incidentally, Thrift's third definition invokes the Spinozan monist metaphysics mentioned above, whereby, in contrast to a prevailing Cartesian dualism, thinking and doing are "aspects of the same thing expressed in two registers" (2004: 61); that is, they are one and the same and, as such, knowledge is gained from encounters and interaction (*ibid*). He states that such "manifold psychology" (*ibid*: 62) is constantly changing as a result of numerous encounters between people and objects. Thrift defines affect as being "the property of the active outcome of an encounter" (*ibid*), manifest as mind and body acting together according to the particular encounter; whether this is a positive or negative action predicates emotion (*ibid*). From this definition, Thrift believes that, as noted above (Scruton, 1999), emotions, and/or non-representations, emerge from affect.

3.4.1.4 Ready, steady...

In his fourth definition, Thrift turns to Charles Darwin, for whom "expressions of emotion were universal and the product of evolution" (2004: 63) and whose emotional study was ignored for over a century (*ibid*). One reason for Thrift to invoke Darwin was his claim of an "emotional descent running from animals to humans, born out of the evolution of affective expression as a means of preparing an organism for action" (*ibid*: 64). In this respect, it is possible to make an interesting proposition from this observation: that affect is a pre-emotion or, for our purposes, a *pre-motion*. Thrift notes that while some basic emotions are common to all cultures, how they are communicated is necessarily influenced socially in different ways. Similarly, the car is communicated culturally in vastly differing ways across various social groups, consumer communities and national cultures (e.g. Edensor, 2004; Miller, 2001).

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3.4.1.5 More-than-human affects

Lorimer notes that “affect is distributed between, and can happen outside, bodies which are not exclusively human, and might incorporate technologies, things, non-human living matter, discourses or even, say, a swathe of noise or a swarm of creatures” (2008: 552). This, coupled with the plethora of definitions above – for example, the contemporaneity and ordinariness of the car resonating with the affectual notions of Ruddick (2010) and Stewart (2007) respectively – suggests that the notion of affect is indeed crucial to the assessing the way in which we ‘consume’ the car.

The visceral nature of affect means that, in varying degrees, all the definitions espoused by Thrift (2004) above are correct and each underlines why assessing affect is appropriate for this study. Whether by dint of a feeling-cum-behaviour, an essential desire, the result of an encounter with a person/object, or a means by which we subconsciously prepare to act, we are affected and/or display affectation as a result of internal or external influences and, as a means of providing a visual manifestation of the visceral nature of affect, the car fits the bill perfectly.

It is also interesting to note the link between deep ecology and the works of Spinoza, in that “the environment is not just a reservoir of information whose circuits await mapping, but also a field of forces whose actions await experiencing. In a human sense, it can be called the unconscious, or at least the ground on which the unconscious is constructed” (Hurley, in Deleuze, 1988: ii); indeed Hurley also claims that both Deleuze and Spinoza saw nature (or Nature) as “an Individual, composed of all modes of interaction” (*ibid*). Cooke notes that, though not an environmentalist himself, Spinoza had “an acute sense of our utter dependency on the natural environment” (2007: 160), leading to interest in his work from some in the environmental movement (*ibid*); indeed Arne Naess, the originator of deep ecology (Martin & Bjørkdahl, 2011) made this connection too.

3.4.2 Non-representational theory

Having dealt with affect, we must also consider non-representational theory. As noted earlier, the car can be appropriated as self-representation, as the clothes that motorists wear on the road (see 2.3). As a result, the representational notion that ‘your car says what you are’ has seemingly become the default way of assessing the consumption of

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the car. Just as we judge people by the clothes they wear, we also judge them by the cars they drive (e.g. Bulgin, 1993). As such, it can be said to be a supreme example of an artefact as social constructivism. However, if – as has been suggested – such a postmodern idea as representation is deemed passé, where can we go next?

While the cultural and societal aspects of the car mean that a postmodernist epistemology is still of relevance, if the car itself changes from a mature product (Bayley, 1996) to an immature one by dint of new low carbon technologies, or if the notion or culture of car ownership changes in the future (see 2.6.4), we will need to look deeper. The question of ‘where next?’ vexed Taussig (1993, in Anderson and Harrison, 2010: 4) at a time when social constructivism and the representational were the dominant epistemologies in the New Cultural Geography which so influenced human geography at the time (Anderson and Harrison, 2010). The answer to this question was non-representational theory. Indeed, Anderson and Harrison say that non-representational theory is indebted to the new cultural geography as it acknowledges “that representation matters, that social order is not immutable, and that signification connects to extra-linguistic forces” (*ibid*: 6).

Thrift defines non-representational theory as “the geography of what happens” (2008: 2). If, as noted above in Thrift’s (2004) third definition, emotion follows affect (see 3.4.1.3), then non-representational theory, as the manifestation of emotion (*ibid*), also follows the notion of affect. Some light as to where non-representational theory may fit is provided by Pile who notes “a ‘layer-cake’ model of the mind-body” (2010: 9) comprising of the non-cognitive, whereby “affect is the deepest layer, below, behind and beyond both pre-cognition and cognition ... refer[ring] to flows (of affect) between bodies”; the pre-cognitive, in which “feelings lie between affects and emotion , but they are not yet expressed or nameable, remaining tacit and intuitive ... a response, therefore to transpersonal affects”; and the cognitive, where “emotions are expressed feelings, being both conscious and experienced. Although emotions emerge from feelings, and represent personal experience, they are socially constructed, through language and other representational practices” (*ibid.*). From this ‘layer-cake’, it can be said that non-representational theory resides in the second layer, between affect and emotion, and suggests an incessant ‘ready-aim-fire’ of being, manifest in the state of ‘continual becoming’ mentioned by Thrift, above (see 3.4.1.1).

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As noted above, non-representational theory is a means of going beyond constructivist ontologies (Thrift, 2008), for example into animism (Ingold, 2006; see 3.4.2.8) and, as such, is an important tenet in assessing a holistic consumption of any consumer good, a key example of which is the car. This is because just as the precognitive nature of non-representational theory (Thrift, 2008) animates us, so motorists, in turn, animate their cars in their roles of agents of pre-motion. As was the case with his definition of affect, Thrift defines non-representational theory into several parts or tenets – seven, to be precise.

3.4.2.1 Cognitive reactions

His first tenet adopts a Spinozan monist mien, stating that “nearly all action is reaction to a joint action” (Thrift, 2008: 7), and contends that this cognition, though regarded as ‘weak’ in itself in comparison to pre-cognition, nonetheless “should be seen as an emergent outcome of strategic joint action for which it acts as a guidance function, monitoring and interpreting the situation as found” (*ibid*). This joint action can be said to have its roots in the co-production that constitutes affect, as noted by Ruddick (2010: 30), and such cognition subsequently anticipating the similar cognitions of others and predicating a social awareness (Thrift, 2008: 7) can be applied not only to the way motorists drive and adapt to prevailing road conditions, but the way they react to and judge other motorists and their actions, perhaps using the car they drive and appropriating the way they are driving – that is, their automotive affectations – as a means of ‘guiding, monitoring and interpreting’.

3.4.2.2 Perceptual encounters

This application pertains to the second tenet, in that the nature of non-representational theory means that it “trades in modes of perception” (*ibid*: 7), in that it isn’t biographical (*ibid*) or embodied but manifest as a result of a “continuous and largely involuntary process of encounter” (*ibid*: 8) occurring in a maelstrom of various spaces predicating what Thrift refers to as a “material schemata” (*ibid* – original emphasis removed) whereby the creation and production of practices – “praxis and poiesis” (*ibid*) – is manifest in many fields and subjects appropriate to this study, including “the study of material culture, the sociology of science ... and ... cultural geography” (*ibid*).

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3.4.2.3 Permutable practices?

Thrift's third tenet is especially applicable to this study, and states that "non-representational theory concentrates ... on *practices* ... material bodies of work or styles" (*ibid* – original emphasis) which have transpired and become a constant as a result of "the establishment of corporeal routines and specialised devices to reproduce themselves" (*ibid.*), a notion which links clearly not only to the quotidian use of the car, but also to the autopoiesis of the car system noted by Urry (2004 – see 2.3). By delving further into this third tenet, we find something even more prescient, as Thrift notes that the durance of 'material bodies' is due to "schooling in these practices" (Thrift, 2008: 7) and though these bodies are "continually being rewritten ... and ... new bodies are continually making an entrance" (*ibid*), what brings a stability and durancy to a changing world are practices, the links and sequences we construct by which we make sense of the world (*ibid*). He goes on to say that though practices may change or become discarded, they can still resonate or re-emerge through objects that, once a key constituent of an earlier practice, also change meaning or re-emerge elsewhere, either in a new capacity or simply as a memory, since objects "can have a potent afterlife" (*ibid*: 9). For our purposes, we can say that the car has been a constant in the 20th century, whether as an aspirant, as a necessity, as a freedom, as a status symbol, as an icon, as a changer of our landscape; we have been conditioned, or 'schooled' in the way or practice of the car, of automobility. The cultures of, and technologies behind, the car are constantly changing and re-emerging, a notion graphically illustrated by the rebirth of the electric car after almost a hundred years (see Ivory and Genus, 2010; Black, 2006; Thorold, 2003), one of the emergent technologies for which we may well have to reassess automotive practices again.

3.4.2.4 Sensory perceptions

The fourth tenet of Thrift's non-representational theory is also of great importance regarding how we may consume the car, in that he talks of giving "equal weight to the vast spillage of *things*" (Thrift, 2008: 9 – original emphasis), as non-representational theory "takes the energy of the sense-catching forms of things seriously" (*ibid*). This notion has major ramifications for a cultural and consumer artefact such as the car, since a car can 'affect' our sense of sight, smell, hearing and touch; as Thrift notes, "things answer back" (*ibid*). All of this contributes to the notion of the car as experience, for which one does not have to be a car enthusiast to appreciate, because we

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can all observe the aesthetics of a car exterior or interior, and decide if we think that they are good or bad; we all take in the smell of a car, whether by newness or through use; we hear the sound of a car, whether it be sonorous or an endless drone, one that indicates the correct gear or an imminent breakdown, or an open window, or the acoustics of a car stereo; the ‘feel’ of a car evident in the build of the interior, a slick gear change or heavy steering, or even just the sensation of movement. Enthusiasts and aesthetes may caress and follow the curves of a car with their hand. Thrift notes that “things have another genetic disposition ... [a] ... collective character as a ‘technology’” (*ibid*) or “technicity” (*ibid*) and, though he admits to being unsure as to what makes up a technology (*ibid*), if we employ its original etymology of ‘a systematic treatment’ and regard such technologies as the way in which things operate or are operated, this ‘genetic disposition’ perhaps makes more sense. He also notes that an object may have enough technicities or characteristics to acquire a ‘proper name’, citing Toledo steel or Murano glass, a sentiment echoed by Edensor (2004) and Holden (1998) in the national properties of cars and automobility, a notion which, Thrift (2008) notes, diminishes as a technology becomes more mature and prevalent, as is the case with platform and component sharing within and between automotive brands. However, as new technologies present themselves, it can be said that the car ceases to be the mature product noted by Bayley (1986) and again becomes immature, in terms of knowledges, practices and infrastructure.

3.4.2.5 Sensory experiences

Next, Thrift states that “non-representational theory is experimental” (2008: 12), invoking the performing arts as part of this experiment “to see what will happen. To let the event sing to you” (*ibid*), as he believes not only that there is as much rigour here as in any laboratory experiment, but also because it is “imperative to understand the virtual as multiple registers of sensation” (*ibid*). He laments that “the extraordinary emergences of the social world have to be treated ... as stumbling, inertial and mundane” (*ibid*) when “social imaginaries are just that: they cannot be contained” (*ibid*). This performative tenet follows on from the previous experiential tenet, whereby our experiences inform our performances which, for our purposes, would take place in the car. The non-representational aspect of why motorists act and drive as they do is constantly being discarded and renewed and plays a key role in automotive performances.

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3.4.2.6 'Doing' in the moment

The sixth tenet brings us to affect. The notion of affect has been noted earlier (see 3.4.1) and, to expand a little more, Thrift notes that affect and sensation are “concept-percepts that are fully as important as signs and significations” (*ibid*: 12-13), and suggests that affect itself is “the way in which each ‘thing’ in acting, living and striving to preserve its own being” (*ibid*: 13) is simply how each object or ‘thing’ is merely its own essence, in that the way we act and think varies depending how and where we are (*ibid*). The Spinozan monism, or joint action, of thinking and doing at the same time dictates not only how we understand our surroundings, but also how we perform societal negotiation and subconsciously navigate our worlds (*ibid*). For our purposes, as mentioned earlier, this suggests that the way we act in differing cars and differing traffic constitutes the way we subsequently present our representations and predicates the difference between an automobile and a car.

3.4.2.7 'Being' in the moment

The seventh and final tenet of Thrift’s non-representational theory broaches the subject of ethics, as in agency or ways of being. He purports an ethic of unfamiliarity, or novelty, as a corollary of the fact that “the classical human subject which is transparent, rational and continuous no longer pertains” (*ibid*: 14) and the reality that contemporary “being or culture take[s] on added layers of complexity” (*ibid*). A novelty ethic, he says, would permit ‘aliveness’ and allow us to become what we can know, by engaging in “a thoroughly ontological involvement” (*ibid*). Doing so affirms the *raison d’être* of non-representational theory, and of affect, as “the energies that constitute our aliveness to the world are ... subject to multiple modifications and transformations” (Santner, 2001 in Thrift, 2008: 15).

By listing Thrift’s tenets of non-representational theory, we can see that it is not simply relevant to this study, but crucial to it. The tenets are applicable to so many aspects of the consumption of the car, not only in terms of perception, cognition and performance but, crucially, sensorial in terms of experience, but also in terms of practice as text, understanding and knowledge.

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3.4.2.8 Animating the car

The rationale for appropriating an affectual and/or non-representational epistemology as a means to investigate car consumption is that the car, as a representational artefact, provides a space in which we can express the affect borne of the unconscious and pre-reflexive actions (McCormack, 2005) of car use. This means that, as “representations become presentations, processual ways of going on” (McCormack, 2003: 502), then cars, as representations, “are reanimated as active and affective interventions in a world of relations and movements” (McCormack, 2005: 122). This is why it is fair to say that ‘our car says what we are’, in that not only is this true of more overt displays of automobility, but it may also be true of those who claim that they have no interest in cars, claiming that a car, to them, is simply a means of getting from A to B. Affect and non-representational theory ensure that even without any active, cognitive interaction, cars act as mobile avatars. Similarly, it is suggested that this is why cars signify the Other and, as such, are representative of what motorists are not, as much as what they are.

Turning representations into presentations necessitates animating them. Ingold notes that convention says that “animism is a system of beliefs that imputes life or spirit into things that are truly inert” (2006: 10). On the face of it, this definition is fitting. However, he goes on to say that this definition is wrong, because animism is not so much about “not so much the infusion of spirit into substance, or of agency into materiality, but is rather ontologically prior to their differentiation” (*ibid*). In other words, this animism is something that happens *before* the animation is physically manifest, and not during. He claims that, ontologically, animism is “not an emanation but a generation of being, in a world that is not pre-ordained but incipient, forever on the verge of the actual” (*ibid*: 11-12). That is, animism is not the production of being, but the incessant creation of being, and it is this incessancy which propels animation. In a similar vein, Thrift suggests that “there is no ‘stable’ human experience because the human sensorium is being constantly re-invented” (2008: 2), meaning that “how and what is experienced as experience is itself variable” (*ibid*).

3.5 Reflexivity

The spirit (or, continuing in a Spinozist mien, essence and nature) of this study echoes that of Goethe’s epistemology which is rooted in a “subjective perception” (Riordan,

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2001: 66), upon which Steuer notes that “Goethe’s epistemology is a form of perspectivism, but one contained within the limits of sensual experience” (Steuer, 2002: 162). As such, while this study is informed by perspectives wrought of the sensory experiences of regular motorists and electric car ‘pioneers’ insofar as quotidian and electric automobilities are concerned, it is important to recognise that these aren’t the only experiences upon which this research is predicated.

For example, the inherent politics of social science mean that a researcher’s interests will influence methodological ideals, research practice and results, thereby compromising the scientific ‘purity’ of social research (Alvesson, 2002) and, given my interest in the car and in the environment, it must be admitted that this study is no different in this respect.

However, the fact that behaviours and feelings are inherently complex and ambiguous, and so cannot be simply measured or captured (*ibid*), it is perhaps inevitable that any reality pronounced thereon will have been interpreted in a necessarily subjective manner (*ibid*); indeed, Steuer also notes that “human knowledge appears as a result of the mediation between the individual’s direct experience of nature and the tradition from which the researcher comes” (Steuer, 2002: 162). As such, any interpretations will necessarily result from the truths held by both the subject and the researcher.

Mention has been made of the relevance of the allegedly passé course of inquiry that is postmodernism, with respect to the notion of the car as representation and to the environmental imperative. There is, however, another relevance of postmodernism evidenced in this study that perhaps betrays the research tradition from which, following Steuer’s observation (2002), I have come – the notion of an affect-by-proxy which, following the detailing of individual affectual definitions and non-representational tenets provided by Thrift (2004; 2008), necessitates a rather postmodern degree of affectual and non-representational deconstruction which may be regarded as counterintuitive, yet may explain why there are so many interpretations of affect (see 3.4).

For myself, and regarding my positionality, I have long been preoccupied with what cars ‘say’, what they mean. I would relate certain cars to certain characters in film and

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on television, ascribe certain cars to particular times and eras, all of which I would later understand as the ‘cultural logics of the car’ (Gartman, 2004). They are a way in which I make sense of the world culturally and historically. For me, they are literally signs of the times. I ‘read’ cars as I walk down the road, noting their shape, any adornments, even how they’re parked. Much like Bulgin (1993), cars ‘talk’ to me, they answer back, they make up part of my ‘truths’. Possessing knowledges and opinions concomitant with such automotive influences, it is inevitable that, following Alvesson (2002) and Steuer (2002), the interpretation of interview and focus group transcripts (as well as texts) in the pursuit of wider automotive ‘truths’ will be very much my own. However, attempting to suspend my own ‘beliefs’ while pursuing a suite of methods (see 4.2) will assist in providing a rigour to interpretations that may be subject to what Spinoza (1996 [1677]) would deem as a ‘passion’. That said, the passion I possess for the car and its socio-cultural, historical and environmental ‘logics’ itself provides the opportunity for a unique insight into the potential for low carbon vehicles, and to academic and/or industry benefit.

Coming to this research having been schooled in human geography from a postmodernist perspective, I wondered what had ‘replaced’ postmodernism, a theory which, as noted in 3.2, had supposedly fallen from grace. After all, surely postmodernism still possesses a resonance in a consumer society and, as also noted earlier, had lent itself readily to an apparently default consumption of the car. It was upon reading around further that I stumbled across the notions of affect and non-representational theory – this was it! As detailed in 3.4.1 and 3.4.2, Thrift’s affectual definitions and non-representational tenets (Thrift, 2004; 2008) could be applied to various stages and processes concomitant with the car and automobility. This could be a more in-depth ‘consumption’ of the car, looking beyond the representational.

However, as conceptualisation proceeded, I came to realise that I hadn’t ‘stumbled upon’ affect and non-representational theory at all. Looking back through previous work, including my BSc dissertation, it dawned on me that I had in fact been aware of the ideas behind the premise of affect and of non-representational theory for some time, but hadn’t recognised it. Mimi Sheller’s paper on ‘Feeling the car’ (2004) had resonated strongly on various levels at the time of my BSc dissertation and yet, perhaps due to being out of academia for a while, I hadn’t made the (now obvious) connection

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until shortly after commencing my PhD and nor, if Merriman (2009) is to be believed, had many others pursued this, let alone in an environmental context.

Having considered my positionality and rationale with respect to this study, it is necessary to ruminate upon the efficacy of it. The travails specifically pertaining to the online questionnaire, delaying the initial tranche of data collection (and therefore the research itself) considerably, are documented in 4.3.1. But once underway, how could the study have been done better?

One striking aspect of this research is that, although innovative in concept, it has been wholly conventional in execution – questionnaire, interviews and focus groups; even the content analysis was drawn from hard copies of newspapers rather than online editions (two of the newspapers in question, however, operate behind ‘paywalls’). A more innovative approach towards an automotive affectus may have been akin to that taken by a similarly-interested PhD student with whom I have come into contact since my research began, that of the ‘ride along’ (see Waitt and Harada, 2012; Harada and Waitt, 2013) permitting the observation of how Thrift’s affectual definitions and non-representational tenets (Thrift, 2004; 2008) were enacted while driving, rather than constructing a static affect-by-proxy. That said, the approach I have taken has permitted a deeper assessment of the affectual and non-representational nature of car as artefact, as opposed to driving practices per se, as a starting point in determining where ‘here’ is with regard to the consumption of the car. Mobile observations are perhaps for another study and different ethical applications.

Insofar as the more practical, less theoretical, aspect of this study was concerned, the data collected was necessarily subject to the participation or otherwise of others whether this is in respect of questionnaire returnees, interview respondents, focus group participants or stakeholder representatives. Questionnaire delays aside, mention is made in 4.3.4.3 of how responses to requests for participation made to stakeholders ranged from acceptance, to ultimately declining after agreeing to take part, to a lack of response despite repeated approaches. Similar barriers were encountered regarding interview respondents, whether in declining to take part after the notion of the use of their car as an interview site was posited or, as was the case with more than one CABLED driver, ceasing to answer e-mails after initial contact was established. While

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such difficulties and participatory rejections are no doubt part of the research experience, there were occasions when I felt quite despondent about this, almost passive, and wondered if I could have done more in this respect, or even whether my approaches would have had more authority if I hadn't been a 'mere' PhD student.

The rigours of analysis have occasionally impacted upon morale, leading to occasions of doubt about my research. That said, despite – or perhaps even because of – these difficulties, the nature of data ultimately collected is nevertheless rich, lending an insight into private, public and corporate attitudes towards the car, and to low carbon automobility.

3.6 An automotive and environmental geography – bridging the human/physical geography divide

Holt-Jensen notes that the diminishing nature/culture binary, one of the latest developments in geography, has meant that “research projects across the traditional divide” (2009: 206), such as those into global warming and subsequent societal responses to it, have become of greater importance (*ibid*). In appropriating both postmodern theory as a means to facilitating “a better understanding of environmental problems and the inter-relationships between science, society and nature” (Gandy, 1996: 23) and providing an insight into the cultural and representative aspect of car consumption, and affect/non-representational theory to explore the performative aspects of car consumption, this study bridges the gap between the human and physical geographical disciplines.

The cultural and semiotic nature of the car means that it has always been more than simply a means of transport. In utilising a variety of qualitative research methods in an appropriate order so as to maximise the number of potential respondents and the quality of data, together with postmodern and affectual/non-representational epistemologies to support a constructivist ontology, this study intends to ascertain how we consume the car as a socio-cultural text, artefact and status symbol.

The divide crossed by this study in assessing the consumption of the car and the subsequent environmental implications means that Holt-Jensen's observation reaffirms the justification for, and rationale behind, this project and, in so doing, perhaps places it

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at the vanguard of geographical and/or low carbon vehicle research. In reconciling the irrationality of car consumption with the rationality demanded by the environmental imperative, this study will provide a new perspective upon the appetite and potential for low carbon automobility.

4. Method and Data Collection

4.1 Introduction

The postmodernist (see 3.2 and 3.3) and affectual/non-representational (see 3.4) approaches to this study necessitate looking beyond the ‘what’ of quantitative inquiry, and so pursues the ‘why’ facilitated by the collation of more qualitative data. This is despite the fact that, in as far as the former is concerned, ‘social’ research conflicts with the essence of postmodernism, as if languages and texts defy the empirical nature of ‘social’ research (Alvesson, 2002). Yet, following Baudrillard (1996), surely language and text and signs and images constitute the ‘social’ in a consumer society; indeed, Alvesson admits that “reading texts of all kinds ... might be empirical research for some people” (*ibid*: 2), an observation which underpins this study. Despite postmodern scepticism, one aspect of this study concerns the textual consumption of the car, and the rationale for such consumption warrants the collection of empirical data to capture it, so as to provide a depth and a richness that is beyond the remit of quantitative data collection methods.

According to Alvesson (2002: 10), postmodernists regard social science as “subjective ... characterized by tentativeness, fragmentation and indeterminacy”, characteristics which are perhaps inevitable if we all regard a given text differently. Indeed, signifiers are beyond control (Alvesson, 2002) as we all consume different texts in different ways; in turn, as “there is no single, self-evident or best interpretation” (*ibid*: 44) of a text, such fluidity means that it is justifiable to apply a postmodern epistemology to the semiotic consumption of the car, in turn, necessitating the employing of qualitative methods.

Similarly, though perhaps more obviously, a qualitative approach is demanded in pursuing the more affectual and non-representational facets of motorists cars, facets which would be best served by interviewing drivers in their cars so as to better elicit any feelings and sensations wrought by their cars, and in ascertaining responses to the more cultural aspects of the car via more informal, conversational means.

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The details of the suite of data collection methods employed during the course of this study are as follows:

- an online questionnaire made available to employees of Coventry City Council and Rochdale Metropolitan Borough Council (MBC) which, though primarily a means of respondent recruitment, also constituted a data source in itself ;
- semi-structured interviews with employees of Coventry City Council and Rochdale MBC who responded to the online questionnaire and consented to interview, and;
- focus group discussions with employees of Coventry City Council and Rochdale MBC who responded to the online questionnaire and consented to participation therein.

These methods were intended to establish a wider automotive opinion and to ascertain how the car is consumed and experienced individually, as well as how it is regarded societally. However, in establishing an extant low carbon automobility, we need to ascertain what is being done to foster a low carbon automobility and, so as to build a fuller picture of both extant and future low carbon automobility in terms of provision and facilitation, it was decided to conduct:

- semi-structured interviews with stakeholders within the low carbon sector, including manufacturers, local authorities and participants of the CABLED (Coventry and Birmingham Low Emission Demonstration) electric vehicle trial.

Garnering stakeholder opinion upon low carbon vehicles, together with that of motorists, can go some way to establishing a holistic low carbon automobility. As to where wider low carbon vehicle knowledges and opinion may stem from, it was decided to consider:

- content analysis of the motoring pages of The Sun, The Daily Mirror, The Daily Telegraph and the Sunday Times.

This would supplement the result of the focus group activity insofar as investigating cultural sources of knowledges and opinions.

From the outset, a phased mixed methods approach composed of questionnaires, semi-structured interviews and focus groups was anticipated, with an initial intention being that each stage of the data collection would be iterative in nature, and that the questionnaire response would inform focus group recruitment which would, in turn,

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inform semi-structured interview recruitment (as we shall see, although the methods of data collection didn't fundamentally change throughout the study, the sources and means of recruitment did). Such an approach would not only maximise the qualitative data collected, but would also provide a methodological triangulation (Gomm, 2009) in an attempt to apply a degree of rigour to an intrinsically qualitative study.

I say 'a degree of rigour' as, although the inherent 'messiness' of qualitative data, especially in comparison to quantitative data, means that it can be argued that while rigour *per se* isn't necessarily required – or even practicable – here, such a structured methodological triangulation can instead provide at least *a* rigour. As the conceptualisation of the data collection evolved, it was later decided that once recruitment and rudimentary data collection had been effected via the online questionnaire, a focus group discussion could actually be employed to 'socially discuss' the more social and cultural aspects of the consumption of the car, with the semi-structured interview used quasi-independently to assess the more individual, affectual and experiential aspects of the consumption of the car.

Insofar as sampling was concerned, an early thought was that targeting a unitary body such as a council would permit a large, bounded and varied population to be contacted en masse via work e-mail addresses or newsletter facilitating large scale recruitment. The relationship between Coventry University and Coventry City Council was brought up during discussions with my supervisory team, and it was decided that the city council could be utilised as a sampling body, with an online questionnaire acting as not only a source of data but also as a form of respondent interview and focus group recruitment. The later inclusion of Rochdale MBC as a sample body, abetted by my connections as a Green Volunteer, is detailed in 4.2.1.

The rationale and execution of, and ethical issues concerning, each method are explored in greater detail throughout the chapter.

4.2 Data collection strategy

The research question of this study is 'are existing automobilities a barrier or a lever to a low carbon automobility?' and, in this matter, not only is how motorists 'consume' the car – as status symbol, icon, cultural artefact and experience – key, but the

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autopoietic nature of the ‘system of automobility’ (Urry, 2004) means that, as a disruptive technology (2.6.4), a low carbon variation of the object of consumption has to be facilitated. That is to say, it is not enough for low carbon vehicles appeal to our desires and our instincts, but they also have to be accessible, convenient and practical; if we are to make the transition to a low carbon automobility, they have to work.

Therefore the challenges facing a transition to a low carbon automobility (see 2.8) mean that it is also necessary to look beyond how the motorist may regard a low carbon automobility, and to seek out the opinion of other actors or stakeholders in the low carbon sector needed to service this transition – such as manufacturers, policymakers, infrastructure providers – if we are to ascertain a holistic low carbon automobility.

Despite the novel approach that this study takes to assessing the consumption, or the sociology, of the car (see 3.4), its methods – questionnaire, focus groups, interviews – are perhaps thoroughly conventional. While a questionnaire may be an almost default way of acquiring initial data, it was felt that interviewing motorists in their cars was an appropriate way to explore how they experience and feel about their own particular cars as artefacts rather than observing how they pilot them, whereas a focus group is a suitable modus by which to discuss differing cultural consumptions regarding the car.

Figure 4.1 provides a schematic diagram of this process and the rationale behind it, depicting how, from these tried-and-tested methods, we can establish everyday experiences and opinions concomitant with contemporary automobility as described in 2.3 and 2.4. By appropriating notions of affect (3.4.1) and non-representational theory (3.4.2) to analyse data from both these interviews and interviews with electric car drivers, we can compare how cars powered by extant and emergent technologies make drivers feel, and just how conventional ICE automobilities may (or may not) be reconciled with low carbon, particularly EV, automobility.

However, future low carbon technologies need to fit into the automobilities to which we have been conditioned if an uptake of low carbon vehicles is to be facilitated. As such, it is pertinent to counsel opinion from bodies which will facilitate a future low carbon vehicle uptake within a holistic low carbon automobility demanded by the environmental imperative, such as car manufacturers, charging point providers, low

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carbon vehicle policymakers and those who administer these policies. Together, the opinions and actions of these stakeholders, along with those of everyday motorists, can be said to constitute a holistic low carbon mobility. What we need to do is establish where ‘here’ is in terms of contemporary mobility and how we go on from here in terms of a low carbon mobility.

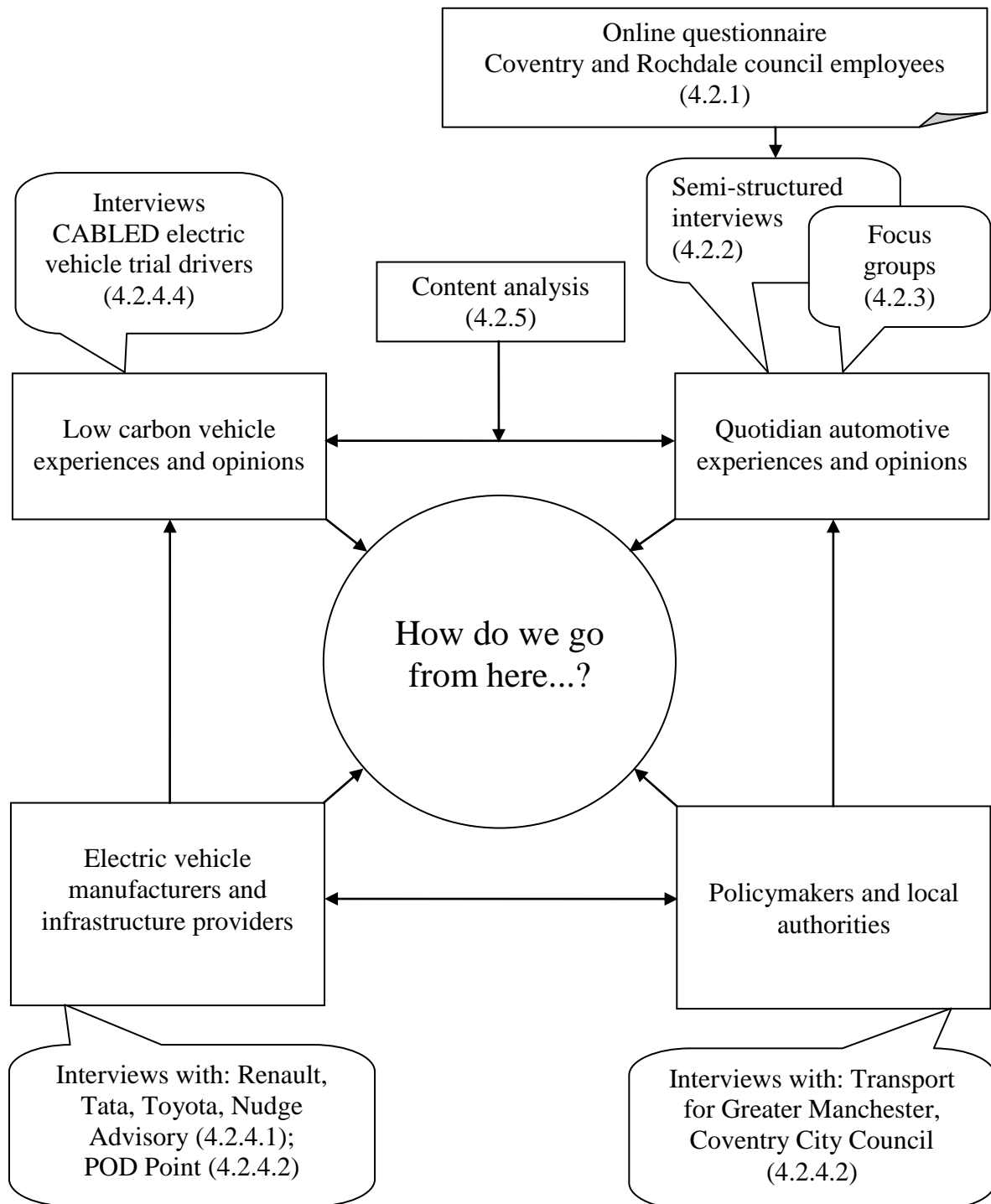


Figure 4.1 Schematic diagram of data collection process

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An important concern in social research is that of ethics, the nature of which underpin the integrity of a piece of research (Bryman, 2012). Following Diener and Brandall (1978), Bryman talks of four main issues, namely “whether there is *harm to participants ... a lack of informed consent ... an invasion of privacy ... deception* is involved (2012: 135 – original emphasis). While the issue of privacy invasion was the least pertinent to this study as no covert observation was necessary, the other three issues noted by Bryman were all relevant. To this end, all interviewees – both motorists and stakeholders – and focus group participants were provided with an information sheet detailing the nature of the research and how any data collected would be dealt with, as well as any particular methodological permissions and a notification of their right to withdrawal. An informed consent form was attached to the participant information sheet for interviewees and participants, to be signed by both them and myself. More detail on the ethical issues pertinent to each method of data collection is noted in the respective sections below.

4.2.1 Online questionnaire

One aim of the data collection is to garner opinion of both conventional and low carbon vehicles from ordinary motorists. While large bodies such as a university population might provide a requisite diversity, it was felt that a unitary body such as Coventry City Council (and, later, Rochdale MBC) would better provide a large, bounded population of motorists comprising a mixture of ages, genders and occupations.

Long a staple part of geographical research, questionnaire surveys can be used to collate social, political and environmental attitudes and opinions (McLafferty, 2010), questionnaires can be regarded as an almost default method of data collection (Bridge, 2003). Though the information gleaned from questionnaires may be limited compared with more qualitative methods (see below), the questionnaire is nonetheless an efficient way of collating information from a large sample population (McLafferty, 2010).

It has been noted that there has been a declining response to questionnaires over the years (de Leuww, 2008), and it was hoped that posting an online questionnaire with a large body or utility such as a local authority would not only address the potential problem of a low response, but also maximise and accelerate initial response to it, and

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address potential sampling issues, such as who/where/how representative respondents are (McLafferty, 2010).

The rationale behind this questionnaire was to act as a means of recruitment for the focus group(s) and semi-structured interviews planned to take place later in the study. In addition, focus group selection/groupings would be carried out on the basis of the answers returned. Placing the questionnaire online would allow electronic retrieval and collation of returns as well and, together with a hyperlink to the questionnaire on the Coventry City Council website (and, later, on the Rochdale MBC website), would permit a widespread dissemination among the target sample. Should enough responses be returned, then the questionnaire could also act as a means of data in its own right.

An online questionnaire (appendix 1) was composed with the initial intention of it being disseminated to all council employees across Coventry City Council. The nature of the study meant that there were no major issues concerning ethical approval, with any ethical issues concerning the questionnaires revolving around ensuring that the wording of questions in such a way that wouldn't cause offence or alienation, or be construed as leading questions (Simmons, 2008). It was hoped that issues concerning sampling strategies and bias resulting from the exclusion of those without internet access (de Leuw, 2008) would be addressed by employing the means of dissemination noted above. Ethical approval for this part of the study was granted on 24th November 2011, subject to approval of the questions therein. Using SNAP questionnaire software and hosted by SURGE, the questionnaire was approved for dissemination by mid-December 2011.

The questionnaire was composed between October and December 2011. As mentioned above, it was envisaged that it could act not only as a source of data but also as a means of recruitment and, as such, was designed in such a way as to not only gather pertinent information and opinion, but also to provide a means of grouping respondents according to answers given to inform focus group selection. This meant that to maximise the potential of both scenarios, the questionnaire had to be designed so as to be as comprehensive as possible while not taking an inordinate amount of time to fill in. Similarly, to aid potential focus group selection, the questionnaire was designed to provide as much information about respondents while also providing them with the

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necessary degree of anonymity, which meant that the need to reconcile data, convenience and anonymity was somewhat of a balancing act. The final version of the questionnaire consisted of 26 questions and was split into three sections headed '*about your car*', '*about low carbon motoring*' and '*about you*'.

The first section, *about your car*, asked for details about respondents' car (make, model, age, fuel type), usage (frequency of activities) and domestic situation (off-road parking, number of cars in household). In addition, this section sought to ascertain the sources of respondents' knowledge and/or opinion, factors in car choice, and how respondents regarded the car.

The second section, *about low carbon motoring*, enquired about respondents' knowledge of the debate regarding low carbon vehicle policy, their experience and consideration of low carbon vehicles, environmental considerations, and – as perhaps the most immediate answer to low (or very low) carbon automobility – as to what would encourage the consideration of an electric car.

The third section, *about you*, asked respondents to give details such as their gender, age (within delineated groups), occupation as described by categories utilised by the Office of National Statistics (and provided by SURGE) and the council department in which they worked. It was hoped that all the questions in this final section would provide a comprehensive picture of respondents while still protecting their anonymity.

The final two questions of the third section comprised of the recruitment constituent of the questionnaire, and enquired as to whether respondent would be interested or willing to take part in a focus group discussion and/or an interview. Utilising the questionnaire in this way as a means of focus group recruitment would in turn satisfy the requirement for homogeneity necessary within a focus group (Smithson, 2008) in that all the participants would share a common employer.

The questionnaire was piloted during November 2011, with any questions and problems noted and subsequently addressed. The approximate length of time it took to fill in was also noted, with ten minutes deemed to be an acceptable amount of time for it to take.

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Permission for their hosting of a hyperlink to the questionnaire had already been granted by Coventry City Council by the time the questionnaire was ready to be launched by mid-December 2011. However, following a suggestion to tie in the questionnaire with the launch of an electric bus service in Coventry in early 2012, the questionnaire, complete with a URL for the city council to host on its website, was ready for launch on 7th of February 2012.

Unfortunately, there were delays beyond my control and, with still no news of a launch date on the city council's website, by the end of April 2012, it was decided to look at a 'Plan B'. To this end, contact was made with Rochdale MBC and it was agreed that a short article about the study would be put into the Rochdale MBC bi-monthly online newsletter, together with a hyperlink to the questionnaire.

Following further delays, the questionnaire hyperlink eventually went live on the Coventry City Council website on the 25th May 2012, five months after it was initially ready, and was hosted until the 29th of June. Things moved rather more quickly at Rochdale MBC, and the article went out with the hyperlink on the 20th of June, and was hosted until the 18th of July.

At the end of the respective hosting periods, 57 questionnaires had been returned in total – 35 from Coventry City Council and 22 from Rochdale MBC. Further information from Rochdale MBC revealed that 153 people clicked the summary article to go on and read the full article containing the link (Rochdale MBC, 2012 – pers. comm.). This data would, in effect, suggest a return rate of just over 14%.

Insofar as how representational the questionnaire response was, there was a near even gender split of 28 male and 29 female respondents, as illustrated in figure 4.2.

Figure 4.3 shows how all age groups except one were represented by the sample. This means that while the questionnaire sample size may have been modest, it did boast a representative range of both gender and age returnees.

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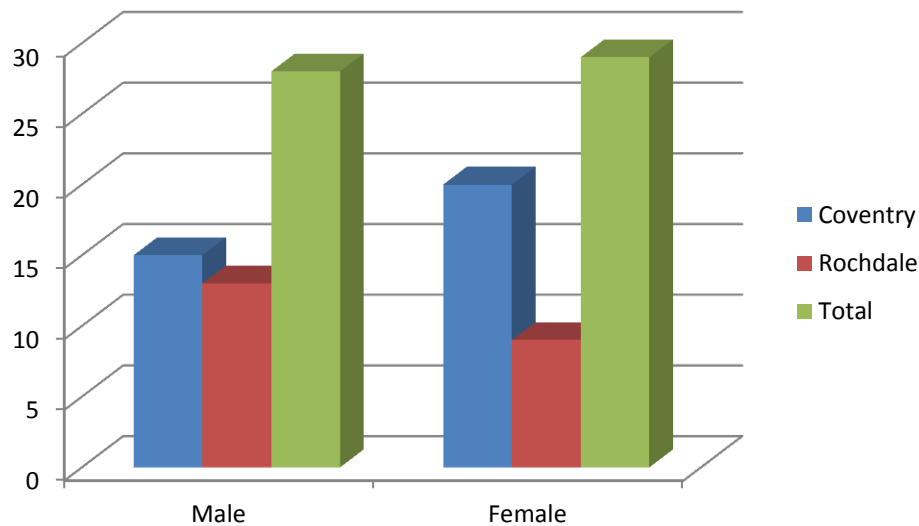


Figure 4.2 Gender of questionnaire returnees

From the returned questionnaires, it transpired that 12 respondents (7 from Coventry and 5 from Rochdale) expressed an interest in participating in a focus group discussion, whereas 15 expressed an interest in participating in a semi-structured interview (10 from Coventry and 5 from Rochdale). While the number of respondents in both locales assenting to take part in a focus group discussion has meant that the focus groups were essentially self selecting, the questionnaires will form part of data used in this study.

For the purposes of questionnaire analysis, those who returned questionnaires are referred to as “questionnaire returnees”.

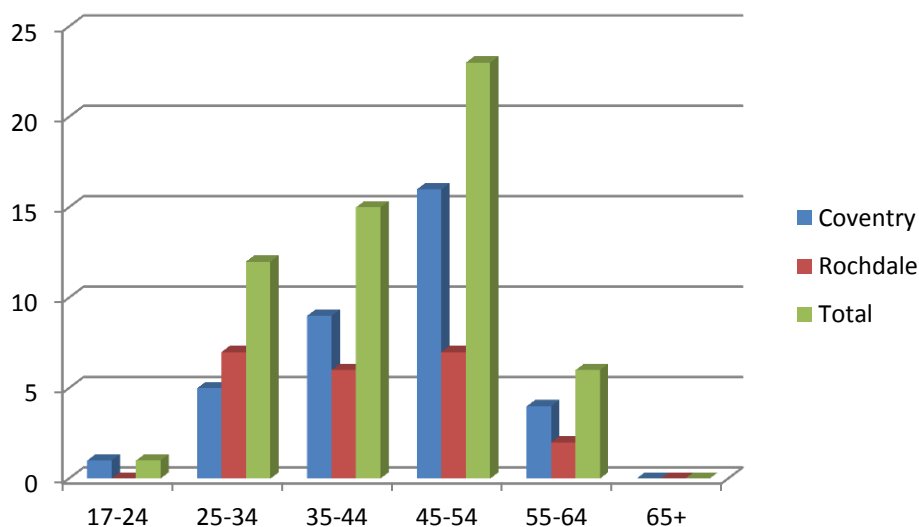


Figure 4.3 Age groups of questionnaire returnees

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4.2.2 Motorists semi-structured interviews

Though composed of pre-set questions in the manner of questionnaires, the informal, conversational nature of the semi-structured interview permits elaboration and expansion, providing rich, unique data while allowing each respondent to be treated as an individual (Gomm, 2009). The inherently variable responses in semi-structured interviews, as well as focus groups, means that these methods may not lead to *the* truth, instead but to various perceptions of *a* truth (Longhurst, 2010) which, given the postmodern (and even post-postmodern) epistemology of this study, is precisely the point and underlines their suitability.

The opinions and experiences of the motoring public are central to this study, for it is how they ‘consume’ the car that will inform a seemingly ignored automotive sociology (Hawkins, 1986; Merriman, 2009 – see 2.3) and provide some basis for future study. As already mentioned, recruitment was carried out via the online questionnaire, the process for which is detailed in the section 4.2.1.

As a result of the questionnaire, six respondents from Coventry City Council and four respondents from Rochdale MBC were interviewed. Further enquiries by a respondent from Rochdale MBC meant a further two respondents were recruited, meaning that twelve interviews were conducted – six from Coventry and six from Rochdale.

The importance of knowing where ‘here’ is as a means to establishing how we indeed go from here was noted at the beginning of the literature review (2.1), where it was also noted that the ‘here’ that is the contemporary societal and cultural view and experience of the car is crucial, as it is by appreciating the quotidian automobilities beyond the practical ‘how-and-why’ of car consumption that we can begin to consider how we may or may not be able to make the transition to a low carbon automobility.

The interview (see appendix 2) was loosely constructed of five sections which were designed to assess the following aspects of quotidian automobilities:

- Rationale for and likes/dislikes of motorists’ cars
- Views of the car-as-representation

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- Experiential/affectual aspects of motorists' cars
- Opinion and knowledge of low carbon vehicles and policies therein
- Automotive preferences

These sections or aspects were chosen for analysis so as to assess automotive rationale regarding car choice, to see how everyday motorists saw and 'felt' their cars, and to gauge if and how any information about low carbon vehicles was received and perceived. By analysing responses to the questions in the interview and then comparing responses from electric car drivers – that is, comparing responses of everyday motorists with those who have actually experienced electric cars on an everyday basis – it may be possible to determine any socio-cultural resistance to an uptake of low carbon vehicles.

It was thought that an appropriate way in which a semi-structured interview could be carried out is to use drivers' cars as the site for interviews. In this way, it may have been easier for motorists to recall and relate their experiences and sensations behind the wheel and also to observe and enquire about any personal artefacts in the car, such as CDs, furry dice or car window stickers. As such, following Sin (2003), it was determined that interviews should take place in motorists' (which, due to their driving internal-combustion-engined cars, are from here on referred to as ICE-drivers for analysis purposes) cars, so as to elicit as many affectations, emotions and feelings as possible, more so than may be the case in a distant location, such as an office. This would be beneficial on two counts; firstly because the car is the space in which any automotive feelings and sensations would be manifest during driving (see 3.4.1 and 3.4.2); secondly, using ICE-drivers' cars as a site for the interview would also guarantee a quiet space in which to conduct the interviews.

Insofar as ethics is concerned, confidentiality and anonymity are key issues concerning semi-structured interviews (Longhurst, 2010). In addition, it is important that the interviewee is comfortable with the manner of data collection, as any discomfort can lead to difficulties transcribing data, or even the termination of an interview (ibid.). For our purposes, potential issues would be the interviews taking place in ICE-drivers' cars and being recorded on a voice recorder. With these issues in mind, ICE-drivers were able to participate and/or withdraw of their own volition. The ethical approval for the respondent interviews was granted on 7th August 2012.

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In the event, interviews took place in eight of the twelve ICE-drivers' own cars, with one taking place in an ICE-driver's partner's car because of repair, and three taking place in an office location. Photographs of ICE-drivers' cars – an interior photograph of the dashboard/fascia and an exterior side-profile photograph – were taken in such a manner so as to not identify individual ICE-drivers i.e. through car registration number-plates, and were taken with permission in situ at the time of the interview or were later provided by respondents.

There was a variety of vehicles driven by the ICE-drivers. They were:

#1: Volkswagen Polo



Figure 4.4 Exterior and interior of ICE-driver #1's Volkswagen Polo

#2: Mazda 3



Figure 4.5 Exterior and interior of ICE-driver #2's Mazda 3

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#3: Ford Transit Minibus



Figure 4.6 Exterior and interior of ICE-driver #3's Ford Transit Minibus

#4: Mazda MX5

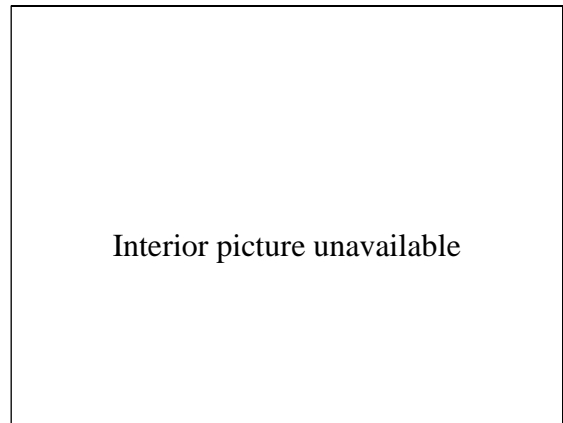


Figure 4.7 Exterior of ICE-driver #4's Mazda MX5

#5: Seat Ibiza



Figure 4.8 Exterior and interior of ICE-driver #5's Seat Ibiza

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#6: Vauxhall Zafira



Figure 4.9 Exterior and interior of ICE-driver #6's Vauxhall Zafira

#7: Ford Escort



Figure 4.10 Exterior and interior of ICE-driver #7's Ford Escort

#8: Ford Mondeo



Figure 4.11 Exterior and interior of ICE-driver #8's Ford Mondeo

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#9: Suzuki Swift



Figure 4.12 Exterior and interior of ICE-driver #9's Suzuki Swift

#10: Citroën C1

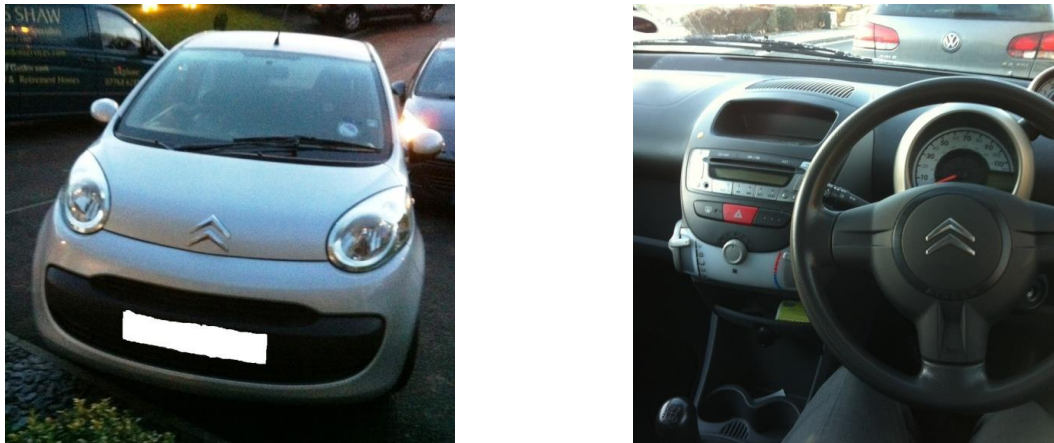


Figure 4.13 Exterior and interior of ICE-driver #10's Citroën C1

#11: Volkswagen Polo



Figure 4.14 Exterior and interior of ICE-driver #11's Volkswagen Polo

#12: Audi S3



Figure 4.15 Exterior and interior of ICE-driver #12's Audi S3

As noted above, for the purposes of motorist semi-structured interview analysis, those who took part in the interviews are referred to as “ICE-drivers”.

4.2.3 Focus groups

As mentioned in the introduction to the literature review (2.1), a key part of ‘here’ is how we ‘consume’ the car, looking beyond a prosaic ‘how and why’ of car use and to assess how we regard and view the car, and how might knowledges, opinions and meanings be produced and manifest. However, the question of how and from where these knowledges, opinions and meanings might be sourced by an automotive laity, and how this might be socially and/or culturally reproduced, necessitates investigation. Given the overtly ‘social’ aspect of the reproduction of these sources, a focus group discussion was deemed an appropriate way to ascertain such social and cultural mores.

The concept of the focus group as a means for acquiring qualitative data was initially practised in the pursuit of market research (Smithson, 2008) and, possibly as a result of its roots, it has been critiqued academically, deemed only suitable as an initial source of data (*ibid*) or as a means to inform and/or further refine studies (Cronin, 2008). One strength of the focus group is that the dynamic of the group allows participants to discuss the subject in hand from their own position with the potential for a depth and perspective different to that which may result from one-to-one interviews (Smithson, 2008), as participants ‘bounce’ off each other, producing more natural discussions and more authentic opinions (Gomm, 2009). The nature of such data collection means that

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the focus group is useful for exploring characteristics in new fields of research (Longhurst, 2010), a notion which may be apposite in terms of this study.

Their informal, conversational nature means that there is a similarity between focus groups and semi-structured interviews (Longhurst, 2010) and the flexibility of both methods allows them to be used along with other methods (*ibid*), permitting the methodological triangulation cited by Gomm (2009).

Insofar as focus groups are concerned, the main ethical issue was that the discussion may not remain confidential (Smithson, 2008) in that while a researcher can offer personal guarantees regarding anonymity and confidentiality, such confidentiality cannot be guaranteed on the part of other focus group participants (*ibid*). As such, a degree of responsibility for maintaining confidentiality is necessarily placed on the shoulders of the participants (*ibid*; Longhurst, 2010). As with the semi-structured interviews, issues concerning participant recruitment were borne in mind, in that participants were able to participate and/or withdraw of their own volition (*ibid*). As with the respondent interviews, ethical approval for the focus groups was granted on 7th August 2012.

To assess how the cultural presentation of the car might inform opinion, two focus group sessions were held – one in Rochdale and one in Coventry – to try and assess if and how people may be influenced by cultural presentations and representations of the car, whether subconsciously or otherwise. As was the case with the respondent interviews, participants were recruited via an online questionnaire (see 4.2.1), a link to which was posted in an online monthly newsletter sent to local authority employees between May and July 2012, with both focus groups taking place in January 2013.

Accessibility and the acquisition of any, let alone appropriate, respondents can be a problem in all methods of qualitative research. While it is suggested that the recruitment of focus group participants should result in a homogeneity (Smithson, 2008) and should ideally pursue a “purposive sampling” (Cronin, 2008: 232) to achieve study goals, it has been noted that, in reality, the recruitment of participants tends to be based more upon availability than any notions of representativeness (Smithson, 2008). It was intended that choosing participants grouped or filtered from earlier questionnaire

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responses from a utility such as a university or local authority will provide the commonality (Longhurst, 2010) and homogeneity deemed necessary for focus group research on two levels: occupation/employer and nature of response.

In the end, the focus groups in both Coventry and in Rochdale were ultimately self selecting, as seven people from Coventry City Council and five people from Rochdale initially said that they would take part in a focus group; ultimately, however, seven people took part in a lively focus group session in Rochdale, with only four taking part in a much lower key session in Coventry. Both councils provided suitable venues for hosting focus groups, being rooms within council buildings, thus minimising inconvenience to participants.

As noted above, the focus group sessions were conducted to investigate the cultural (re)presentation of the car (see 2.4). Participants were asked during these sessions about the way that cars were presented in film, television, music, books, and advertising and what influence, if any, it had had on them on how they thought about the car (see appendix 4 for the question schedule).

The sessions featured various media, beginning with a ‘fun quiz’ comprising of ten pictures of cars depicted in film or television (see appendix 3), with points awarded for naming the make *and* the model of the car depicted and which programme or film/series the picture was from, with 30 points available in all; it was hoped that the quiz would serve both as an ‘ice-breaker’ and might also provide some empirical data as to how much ‘impact’ the programme/film and the car had made upon the participants as part of an ‘manifold automotive psychology’ (see 3.4.1.3).

Later, as part of the discussion, participants were shown eight car advertisements sourced from the official YouTube channels of four car manufacturers – Nissan, Renault, BMW and Toyota – with four of the eight advertisements pertaining to conventional ICE cars and four pertaining to low carbon vehicles. These four marques were chosen as they all offer (or are about to offer) both conventional and low carbon vehicles, and also because advertisements pertaining to both types of vehicle have been uploaded to their official YouTube channels, from which the advertisements chose were gleaned.

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The ICE vehicle advertisements chosen were:

- Nissan Juke ‘Built to Thrill’ (Nissan UK, 2012a)
- Renault Megane ‘The Megane Experiment – Best of the Gisburn Test Drives’ (Renault UK, 2011)
- BMW 1-Series ‘One Origin, Two Originals’ (BMW UK, 2011)
- Toyota Yaris ‘Yaris vs Monster Truck’ (Toyota UK, 2011b)

The low carbon vehicle advertisements chosen were

- Nissan Leaf ‘10,000 miles for as little as £186?’ (Nissan UK, 2012b)
- Renault ZE ‘The Electric Life’ (Renault ZE, 2011)
- BMWi ‘The BMW i3 and BMW i8 Concept’ (BMW, 2011)
- Toyota Yaris Hybrid ‘Silence the City’ (Toyota UK, 2012).

Participants in both groups were asked to make notes on the provided answer sheets as to audio-visual prompts they noticed in the adverts, the overall tone/message from the adverts and a one-word adjective to describe the car as a result of the commercial so as to assess the impact of advertising both as product message and as a cultural construct in itself.

For the purposes of focus group analysis, those who took part in the focus groups are referred to as “participants” from Coventry City Council (CCC) and Rochdale Metropolitan Borough Council (RMBC).

4.2.4 Stakeholder interviews

Automobility has been described as “a self organising autopoietic” (Urry, 2004), in that everything used by the system of automobility – cars, roads, fuel supplies – is produced by it, creating the circumstances for its own expansion (ibid). As such, it follows that, in the pursuit of a low carbon automobility, it would be useful to garner views and opinions other than those of the respondents to the questionnaire. So as to complete a picture of wider knowledges and opinions pertaining to the facilitation of an uptake of low carbon vehicles, it is useful to also garner the opinions of stakeholders such as car manufacturers, infrastructure providers, policymakers and local authorities.

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Another useful body of people from whom to canvass opinion about EV automobility would be those who already have experience of an electric car. SURGE were involved with the then-recent CABLED trial in the West Midlands, and contact was made with those drivers who took part in the CABLED electric vehicle trial by adding a question to SURGE's own post-CABLED survey to the effect that triallists were asked if they would like to take part in further research.

By collating the views of electric car manufacturers, infrastructure providers and policymakers, along with those of electric vehicle triallists, a fuller picture of where 'here' is the pursuit of a low carbon automobility could be ascertained (see figure 4.1).

As noted in 4.2.2, confidentiality and anonymity are key ethical issues concerning semi-structured interviews, with an additional confidentiality concern here being professional, for example concerning future low carbon vehicle products, in which case any stakeholder requests to decline certain answers must be respected. Stakeholders were able to participate and/or withdraw of their own volition and, as with the ICE-drivers, ethical approval for this part of the study was granted on 1st May 2012.

4.2.4.1 Car manufacturers

Several car manufacturers now offer a variety of low carbon vehicles, from internal combustion engines tweaked to emit as little CO₂ as possible (such as Ford's Econetic and Volkswagen's Bluemotion ranges) to hybrids (such as the Honda Insight and the Toyota Prius) to plug-in hybrids and range-extended electric vehicles (such as the Toyota Prius PHEV and the Vauxhall Ampera/Chevrolet Volt respectively) to full battery electric vehicles (such as the Nissan Leaf and Renault Fluence). Such diverse technologies warrant the assessment of the various rationales of the manufacturers behind each technology and their views of the appetite for low carbon vehicles and of low carbon vehicle policy as part of a holistic low carbon automobility (see figure 4.1).

A tailored set of questions was drafted to canvas opinion on low carbon vehicle policies, drivers and attitudes and how their products facilitate a low carbon automobility (see appendix 5) and representatives of manufacturers including Tata, Smart, Mitsubishi – all of whom provided vehicles for the CABLED trial – Renault, Nissan and BMW were contacted by e-mail and invited to take part in an interview.

4.2.4.2 Policymakers/local authorities/infrastructure providers

Given the almost total dominance of the internal combustion engine within contemporary automobility, not only in terms of cost and convenience but also in terms of the way its autopoietic nature has perhaps impacted upon how we have become conditioned to the car, nascent low carbon alternatives of all technologies will need some assistance in terms of legislation, subsidy and behavioural change.

The nature of inducements and subsidies offered is determined the policymakers and how they are implemented is the responsibility of other bodies, such as local authorities. Another key policymaker in the field of low carbon automobility is the Office of Low Emission Vehicles (OLEV) which is a cross-governmental body comprising not only of the Department for Transport (DfT), but also the Department for Business, Innovation and Skills (BIS) and the Department for Energy and Climate Change (DECC).

A crucial part of the roll out of low carbon vehicles in which OLEV has been instrumental is the Plugged-in Places scheme (OLEV, 2013), a directive intended to establish an infrastructure of public charging points and implemented in 8 regions of the UK. As might be inferred from the nature of the Plugged-in Places scheme, charging point manufacturers and providers are key to an uptake of electric and plug-in vehicles and their views would also be instructive. The question schedule pertaining to policymakers/local authorities/infrastructure providers is in appendix 6.

4.2.4.3 Stakeholder participants

Having established the rationale and expediency of any potential participation, attempts were made to recruit stakeholders via a variety of means, from initial exhibition contacts, to e-mail, conference and university leads. Some enquiries elicited no response despite repeated attempts and some resulted in eventual declination despite initial enthusiasm. Ultimately, interviews were held with representatives of three car manufacturers, two local authority bodies and with two other stakeholders. They were:

- the (then) Head of the Electric Vehicle Programme at Renault UK
- the Project Manager at Tata Motors European Technical Centre

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- the Corporate Social Responsibility and Environmental Affairs manager at Toyota UK
- the (then) Project and Sector Development Officer at Coventry City Council
- the Information Systems Director at Transport for Greater Manchester (TfGM)
- the General Manager at transport consultancy Nudge Advisory
- the Business Development Director at charging point provider POD Point.

During the interviews, which were conducted in person, by telephone or via Skype, stakeholders were asked about

- their attitudes to low carbon automobility and the drivers therein,
- responses from the public, business, local authorities and the media
- their thoughts on government low carbon vehicle policy and initiatives,
- low carbon vehicle technologies and
- potential impacts upon low carbon vehicle uptake.

As a key component as to where ‘here’ is, it is useful to ascertain how stakeholders such as car manufacturers, local authorities and infrastructure providers might together facilitate a low carbon automobility and see how this compares with the opinions and knowledges of motorists regarding low carbon vehicles and policies. By doing so, not only can we ascertain professional opinion on a low carbon automobility but, along with the thoughts and opinions of everyday motorists and those of low carbon vehicle trial drivers (see 4.2.4.4), we can begin to assess any correlation or disconnect between policy, practice and consumers.

For the purposes of analysis, those who took part in interviews on behalf of stakeholders are referred to as their organisation’s or company’s “representatives”

4.2.4.4 EV-drivers

The barriers to the shift to a low carbon automobility aren’t only fiscal or technological, they are also practical, and even emotional and/or experiential. Drivers who have taken part in low carbon vehicle trials are important to this study as their experience of an electric car, in addition to that of their own ICE car, means that their experiences and opinion of both forms of propulsion can be collated, and so their opinions may be

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useful in assessing a link between how the car is consumed now and how a low carbon automobility may be performed in the future.

As part of a national Government funded demonstrator programme, the CABLED vehicle trial began in the West Midlands in December 2009 and gave members of the public the chance to trial a low carbon vehicle (such as the Tata Indica Vista, Smart ForTwo ED and the Mitsubishi i-MIEV) over a twelve month period (CABLED, 2010). The purpose of trials such as this is to assess real-world practicality and ease of use of electric vehicles, and the 110-car-strong trial found that while electric vehicles will reduce CO₂ emissions, local pollution and noise, issues of price and battery range remain (*ibid.*). Another finding revealed at the end-of-trial event held on May 1st 2012, was that electric vehicles worked well within a multi-car household.

Drivers from the trial were recruited by asking in a post-CABLED-trial survey if they would take part in further research, as mentioned above. In all, 20 drivers said ‘yes’ and their e-mail addresses were forwarded to me. These drivers were all e-mailed in early June 2012.

As with other aspects of the collection of data thus far, things didn’t go according to plan and, as a result of failed responses and unfulfilled promises of participation, ultimately 7 CABLED trial drivers were interviewed. All professional, they consist of two car manufacturer employees, one power generating company employee, three academics, and one academic administrator. Of these seven interviewees, only one – an academic – wasn’t employed by a member of the CABLED consortium.

All the drivers interviewed drove the same type of car in the trial, namely a Tata Indica Vista EV, a supermini of similar dimensions to a Ford Fiesta or a Vauxhall Corsa originating from India, of which the first generation was perhaps best known in the UK as the basis for the CityRover, sold between 2003 and 2005 prior to the collapse of the Rover Group. The Indica used in the CABLED trial was based on the current, second-generation Tata Indica which is not available on the UK market but which, by dint of the installation of its electric powertrain, could almost qualify as ‘hand built’ at Tata’s research facility at Warwick University.

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The drivers were asked as to their experiences and opinion of the vehicle they drove in the trial, their regard for the motor car or automobile in general and their views on the environmental impact of the car. In an attempt to ascertain ‘how do we go from here?’, the drivers were also asked what, given their experiences, would prompt them to consider an electric car and whether or not they thought that other motorists would be able to change to electric mobility.

The CABLED drivers’ question schedule is in appendix 7 and, for the purposes of analysis, those drivers who took part in interviews are referred to as “EV-drivers”.

4.2.5 Content analysis

The importance of ‘knowledges’ was noted in section 2.4, as it is by the acquisition of knowledges that we make judgements and decisions in all areas of our lives. Insofar as the car is concerned, knowledges can be garnered from advertising, from the motoring press, from the motoring pages in newspapers, from the internet and from television.

Car manufacturers not only rely on advertising to increase awareness of their products, but also upon the media. The emergence of their respective technologies means that low carbon vehicles can be regarded as immature products, as opposed to the maturity of those powered by the internal combustion engine (see 2.6). This means that while the acceptance of low carbon vehicles will – as is the case for any product – necessarily be dependent upon the dissemination of information in the media, the immaturity of low carbon vehicles and technologies, as well as a predominate socio-cultural emphasis which seemingly subscribes to Barthes’ “bestiary of power” (1957[1972]: 89), such dissemination takes on a greater import to facilitate acceptance.

Content analysis is “an approach to the analysis of documents and texts that seeks to quantify them in terms of predetermined categories and in a systematic and replicable manner” (Bryman, 2012: 289). Though primarily a quantitative research method, for our purposes a more “qualitative content analysis” (ibid.: 557) approach provides a useful way to find out the *type* of coverage elicited by low carbon vehicles in contemporary media as a means to ascertain the amount of, and the kind of, knowledges of low carbon vehicles which can be garnered from the press, both specialist and general.

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Insofar as the specialist press is concerned, it was noted in 2.4 that sales are falling year on year. For example, average circulation figures for each magazine during the period January-July 2011 were as follows:

- Autocar – 44,567 per week
- Auto Express – 56,424 per week
- Car – 54,006 per month
- Top Gear – 190,535 per month (Brand Republic, 2011).

From the figures quoted above, it is evident that the BBC's Top Gear magazine is far and away the best selling motoring publication on the UK, with sales outstripping those of both weekly publications. However, the decline of car magazine circulation figures mentioned above is exemplified by this publication which, over the latter half of 2013, achieved an average print circulation figure of 137,482 per month (Mediaweek, 2014), although digital sales stood at 13,402 copies per month, meaning that total circulation was 150,884 (*ibid.*), just under 80% of what it was in early 2011.

Insofar as the general press is concerned, four newspapers known to have dedicated motoring pages and/or supplements were selected for analysis – The Sun, the Daily Mirror, the Daily Telegraph and the Sunday Times. The average daily circulation figures for these newspapers in September 2011 were as follows:

- The Sun – 2,725,323 copies
- Daily Mirror – 1,143,788 copies
- Daily Telegraph – 607,186 copies
- Sunday Times – 984,223 copies (Press Gazette, 2011)

Figures of all daily newspaper sales in September 2011 from Press Gazette, excluding the Racing Post, total 9,351,933 (*ibid.*). However, as with the specialist motoring press, it seems print copy sales of newspapers are in decline, as the average daily circulation figures for these newspapers in June 2014 shows:

- The Sun – 2,033,606 copies
- Daily Mirror – 958,674 copies
- Daily Telegraph – 514,592 copies
- Sunday Times – 815,759 copies (Brand Republic, 2014)

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With their greater circulation, and therefore potential reach, over the specialist automotive media, it was elected concentrate newspapers regarding content analysis.

The rationale behind this content analysis is to look at how and/or if the message regarding low carbon vehicles is being disseminated. The number of individual articles pertaining to hybrid (including plug-in hybrid) and electric cars were counted, as was the number of times that important aspects such as price, running costs, battery range, emissions, economy, recharging infrastructure, sales figures and government incentives were mentioned. Note was made as to the type or size of article and, to ascertain any underlying theme, as to whether the article was either positive, negative, ambivalent (that is, neither or negative) in overall tone, or whether it was merely a descriptive piece.

4.3 In summary

This chapter has provided an overview of the rationale behind, approaches taken and methods used to collect data in the course of this study. While the nature of qualitative research may not be possessed of rigour *per se* in the same way that a more quantitative study might, appropriating a suite of methods can nonetheless provide ‘a’ rigour to such research while maximising data collection thereon.

In combining questionnaire (4.2.1), interview (4.2.2) and focus group (4.2.3) data from ordinary motorists, we can not only explore an extant automobility in how the car is regarded and culturally consumed (see 2.3 and 2.4) and how this consumption of the car is manifest (see 3.2), sensed and experienced (see 3.4); similarly, such a subconscious and sensory consumption concomitant with a particular low carbon automotive technology (see 2.6.3) can be gleaned from interviewing those drivers who have experienced EV mobility courtesy of the CABLED vehicle trial (4.2.4.4). Interviewing those stakeholders (4.2.4) who will provide the means for, and also facilitate and administer, the transition to a low carbon automobility (see 2.6 and 2.7) provides a contemporary picture of the policies and pitfalls of, and pathways toward, this goal. The part played by the media as stakeholder in relaying knowledges and opinion (see 2.4) relating to low carbon vehicles to an automotive laity is also assessed by appropriating a qualitative content analysis of newspaper articles pertaining to low

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carbon vehicles (4.2.5), thus complementing the socio-cultural knowledges investigated in the focus group sessions.

The nature of the data collected necessitates analyses over two overarching chapters, the first concerning the knowledges about, and opinions of, low carbon vehicles possessed by ICE-drivers, focus group participants, stakeholders and EV-drivers, and the second pertaining to how the consumption of the car – the rationale, the socio-cultural representation, the experience – is manifest

The first chapter of this analysis is ‘Low carbon vehicles: the here and know’, and is a largely documentary chapter pertaining to the perceptions, knowledge and opinion possessed by both ICE- and EV-drivers in terms of technologies, policy and the potential for a low carbon automobility and, secondly, to stakeholder approaches and opinion on the potentiality and policies pertaining to low carbon vehicles along with, in the capacity of gatekeeper’ the media presentation of electric and hybrid cars. Exploring these aspects can ground where ‘here’ is in terms of low carbon automobility and point to where it might go in the future.

The second chapter of this analysis is ‘Automotive for the People’ and is split into three broad sections. The first is largely documentary in nature and concerns the rationale of car choice as a means to ascertain a quotidian banality of the automotive experience. The second pertains to the socio-cultural consumption of the car and presents analysis on how the car is represented culturally and how individuals’ cars may act as a mobile representation or avatar, drawing on documentary evidence and drawing from a supposedly passé postmodern theory, described in 3.2, which still resonates with the car; can the car be regarded as ‘the clothes we wear on the road’? The third section of ‘Automotive for the People’ looks at the more experiential aspects of the consumption of the car as related by respondents with regard to their own cars and CABLED drivers with regard to the cars they drove as part of the CABLED low carbon vehicle trial, analysed with an affectual and non-representational framework described in sections 3.4.1 and 3.4.2 – an automotive affectus – as a means to explore the more ephemeral, non-cognitive aspects of how the ‘representations’ assessed in the second section of this analysis are ‘presented’, the aspects of automobility that are seldom recognised yet ‘drive’ how cars are routinely piloted.

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The analyses within these two chapters will establish where ‘here’ is (see 2.1) with regard to practical, social, cultural and experiential consumption of the car, along with where ‘here’ is insofar as knowledges and opinion of, and regard for, low carbon vehicles and the policies to foment their uptake. Doing so will help us ascertain if the ways that the car is regarded and consumed are indeed a barrier or a lever to a future low carbon automobility.

We begin with knowledges and opinion pertaining to low carbon vehicles.

5. Low carbon vehicles: the here and know

5.1 Introduction

The purpose of this chapter is twofold. In one respect, it is documentary in that it details where ‘here’ (see 2.1) is with regard to low carbon vehicle technology, stakeholder attitudes and government policies, and what this may entail for low carbon vehicle uptake. In another respect, it pertains to the more theoretical aspect of this research in that it assesses where ‘here’ is with regard to knowledge and opinion of low carbon vehicles held by ordinary motorists and how such vehicles are ‘consumed’ now and may be consumed in the future.

The opinions and knowledges held by motorists regarding low carbon vehicles are important because it is in assessing what people think of low carbon vehicles, as well as what they know (or think they know) about emergent low carbon technologies and also of UK Government low carbon vehicle policy, that we can begin to gauge whether the low carbon vehicle message is reaching the wider motoring public and, if not, begin to address any disconnection therein as the consumption of the car influences and informs a transition to a low carbon automobility.

Three of the four definitions of ‘here’ given in the introduction to the literature review (2.1) pertain to the opinions and knowledges surrounding the technologies, costs and practicalities of low carbon automobility, and suggest that there are several strands or aspects pertaining to low carbon vehicles that warrant investigation, such as:

- Environmental impacts and/or amelioration, arguably the *raison d’être* of low carbon vehicles
- The pecuniary aspects of low carbon vehicles, with upfront costs widely cited as a barrier to uptake although lower running costs can act as an incentive
- The various technologies employed by low carbon vehicles, whether these be lower carbon ICE, conventional hybrid, plug-in hybrid, pure electric, or hydrogen fuel cells
- The practical and socio-cultural aspects of low carbon vehicles, an overlooked aspect in low carbon vehicle research and the rationale underpinning this study.

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In addition, we need to consider what is being done to foment an uptake of low carbon vehicles, as well as the efficacy of such measures. As such another aspect of ‘here’ should be considered is

- The content, implementation and dissemination of incentives and information, ranging from advertising and media to government policy.

To assess these notions of ‘here’, we need to consider

- Stakeholder policy drivers, approaches and potential low carbon automobility uptake impacts
- Low carbon vehicle policy – is it appropriate, is the message reaching motorists, and what do stakeholders make of it?
- ICE-driver and stakeholder opinion and knowledges pertaining to low carbon vehicle technologies
- Insights into how low carbon vehicles are perceived and/or experienced by stakeholders, ICE-drivers and EV-drivers

It is in investigating these themes that we can begin to see where ‘here’ is and ascertain if we are ready to make the transition to a low carbon automobility.

This chapter therefore details the analysis of data gleaned from interviews with the ICE-drivers as to their views and opinions regarding low carbon vehicles, the views emergent from the focus group sessions regarding low carbon vehicles and their presentation in the media, and from the interviews with the stakeholder’s representatives from car manufacturers Renault, Tata and Toyota, local authority bodies Coventry City Council and Transport for Greater Manchester (TfGM), transport consultancy Nudge Advisory and charging point provider POD Point, regarding low carbon vehicle technologies and policy that could together be said to constitute a ‘holistic’ low carbon automobility.

From this analysis, it appears that while people are amenable to the idea of a low carbon automobility, there are the perhaps predictable caveats regarding purchase cost and battery range. However, what is also apparent is that, far from a cohesive low carbon automobility, a laissez-faire approach from government has resulted in a

melange of half-hearted policies and partial knowledges which, together with a mixture of technological hardware the like of which hasn't been seen since the dawn of motoring, is manifest as a fragmented low carbon automobility devoid of cohesion and any sense of the holism necessary if low carbon vehicles are to achieve any appreciable uptake and if a nascent electromobility is to challenge the practical and socio-cultural lock-in of the internal combustion engine.

As with other results chapters, direct quotes are in italics and attributed accordingly.

5.2 Low carbon automobility – whys unto the event

Stakeholders play a key role in facilitating a holistic low carbon automobility (see figure 4.1), and so it is pertinent to enquire as to their approach to low carbon vehicles and what their respective companies or organisations were doing to foment their uptake. To this end, stakeholders were asked which of four discrete drivers – whether economic/fiscal, or environmental, or as a response to EU/UK government policy, or public demand – they considered the foremost in their encouragement of low carbon vehicles, and also for thoughts on the other drivers not deemed 'primary'.

5.2.1 Driving low carbon automobility

When asked about the main driver for stakeholders to encourage a take-up of low carbon vehicles, the representatives of Renault, Nudge Advisory and POD Point all said that an economic and/or fiscal driver was the prime motivation. However, whilst Nudge Advisory and POD Point both identified a general growth of their business or income as the economic/fiscal driver, Renault went further, citing issues in the European car market (e.g. Bailey, 2013) in that *'Renault are in a classic sort of generalist squeeze with a whole host of other European mid-range manufacturers'* and so they were seeking to *'find a sector of the market where we can get genuine leadership'*.

As public bodies, it is perhaps unsurprising that the representatives from both Coventry City Council and TfGM cited environmental considerations as the main driver behind their fomenting of a low carbon vehicle uptake, and particularly air quality issues such as *'real problems with NO₂ [nitrogen dioxide]'* on arterial routes into Coventry. It may seem incongruous for a car maker to cite the environment as a main driver for encouraging low carbon vehicle uptake, yet despite – or maybe even because of – a

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low-key presence of the Tata brand regarding low carbon vehicles (or any vehicles, in fact) in the UK, it was suggested that the company understood the environmental importance of low carbon vehicles '*certainly in India, where you would argue that there's a lot of pollution and the automotive industry is not as advanced as in other areas of the world, not such a focus on emissions*', although that focus is '*strengthening over time*'. This assertion is borne out by the 'National Electric Mobility Mission Plan 2020' report published by the Indian government's Department of Heavy Industry (Government of India, 2012) and also by recent media reports from India suggesting that Tata themselves are indeed pursuing a range of hybrid, electric and alternatively fuelled vehicles (The Economic Times, 2013).

Instead of nominating a main driver, Toyota believe that there is no one single driver, rather a need to appropriate a number of different factors, such as a 'social responsibility' – '*oil is running out, climate change is happening*' – along with a 'customer driver' such as running costs and a need for '*the right government policy in place*', citing how a long-standing CO₂ based policy has positively resulted in a take-up of lower carbon ICE vehicles.

5.2.2 Back seat drivers

We can see from their responses that stakeholders hold some interesting similarities and differences in their attitudes to low carbon vehicles and in how their approach would facilitate a low carbon automobility. Of the four assigned, discrete drivers into which any of the stakeholders' main drivers could have been appropriated, it seems that the main drivers are economic and/or environmental.

Indeed, there was some agreement overall regarding the influence of costs upon the uptake of low carbon vehicles, with both TfGM and Nudge Advisory regarding cost as '*fundamental*' while Renault's representative suggested that '*the main driver's always going to be cost*' and citing a need for people consider the '*total cost of ownership*', a point also raised by Tata's representative and also by TfGM, who cited a report (McMorris *et al*, 2012) showing that, even with a higher initial outlay, the total cost of ownership favours low carbon vehicles over their more conventional counterparts. Cost concerns went beyond consumer and/or running costs, with Tata's representative noting that the costs of technology meant '*a high ticket of entry to get into these markets*' –

hence increasing collaborations between car manufacturers such as that between BMW and Toyota to develop fuel cell and other technologies (see BMW, 2013b; Toyota UK, 2013) – though suggested that economies of scale would make low carbon vehicles a more commercial proposition.

As alluded to above, it is perhaps unsurprising that economic/fiscal drivers are secondary to environmental ones for local authority bodies although, given the governmental budgetary regimen under which public bodies are constrained, low carbon vehicles perhaps cannot be afforded the priority that would be desired. That said, the extent to which environmental concern will influence uptake may depend upon political and fiscal factors according to TfGM's representative, who suggested that it could depend if the EU penalises the UK for failing to hit air quality targets (see EurActive, 2013) and '*how the government rolls that cost down onto local authorities*' in the future, suggesting that local authority services could be affected if the impact of pecuniary penalties for future air quality breaches were indeed passed down. While it was suggested by TfGM that the prospect of penalties for repeated air quality infringements may eventually foment acceptance of a need to reduce emissions, it could also be suggested that such measures will hardly endear the notion of the environmental imperative to the population at large.

There was a more mixed response regarding the influence of environmental issues upon the uptake of low carbon vehicles among the non-public body stakeholders, none of whom thought of the environment as a primary driver. These stakeholders did, however, state that it was nonetheless influential, although the representative from POD Point admitted that the environment was perhaps a '*second-level decision*' for many and, along with Tata's representative, felt that despite the environmental benefits of low carbon vehicles and an increase in the number of such vehicles on the road, consumers will still consider financial aspects before environmental ones. Conversely, a different approach might pay off commercially according to Nudge Advisory's representative, who stated that despite the need for a robust case for businesses to justify investment in low carbon vehicles, '*there is a need to be seen to be green*' which '*these days is a good business driver*' in itself. While businesses may be able to make a transition to a low carbon automobility pay, it may be that private consumers may struggle in terms of a similar reconciliation.

Accordingly, public demand wasn't suggested as a primary driver by any of the stakeholders, with Renault's representative observing that any demand '*isn't yet manifesting itself in terms of orders and registrations*' and suggesting that while people may want to see a better world, how much they're willing to pay for it is a moot point, although Tata's representative suggested that while '*public demand is not where the government would expect it to be*' they thought that '*people will be looking for alternatives*' as oil prices rise.

A more downbeat view was proffered by TfGM's representative, who felt that there was '*no detectable public demand*', and even suggested insofar as a public consciousness is concerned that '*they're more likely to believe what Jeremy Clarkson tells them than anyone else, frankly*'. This statement hints at what might be termed as 'the Clarkson effect', a corollary of the popularity and socio-cultural impact of the BBC programme 'Top Gear', the potential for which was alluded to in the literature review (see 2.4).

Both POD Point and Nudge Advisory suggested that demand would increase as prices came down, although the latter suggested that consumers '*tend to see low carbon vehicles, and electric vehicles, as being a bit of a failure as they can't replace all cars*', a view perhaps fomented by the likes of Top Gear, but adding that EVs may not need to be an overarching replacement and highlighting a need for '*educating the consumer in how to use their vehicles*', statements which reinforce the notion that, compared to the maturity of internal combustion-engined vehicles (Bayley, 1996 – see 2.3), the electric vehicle is perhaps an immature product.

It is interesting to note that none of the stakeholders named EU/UK government policy as a primary driver; and yet such policy is key not only to what stakeholders might do regarding low carbon automobility, but also how they might or should go about it. In addition, policy will necessarily be instrumental in how – or even *if* – motorists can adopt, let alone aspire to, a low carbon automobility (see 6.6). Stakeholder thoughts on policy, along with those of the ICE-drivers, are detailed next in section 5.3.

5.3 Low carbon vehicle policy – the good, the bad and the ugly

From the answers provided by stakeholders in part 5.2.1, it seems EU and/or UK government policy wasn't regarded by any of the stakeholders interviewed as a primary driver to encourage an uptake of low carbon vehicles. Why should this be? What are their views on policy, and what (if anything) would the stakeholders like to see to improve policy?

Before we answer these questions, we need to ascertain what the government's low carbon vehicle policy is. According to the website for the Office for Low Emissions Vehicles (OLEV), their responsibilities pertain to grants reducing the purchase cost of qualifying vehicles; promoting research, awareness and commercial opportunities pertaining to low carbon vehicles; implementing a nationwide charging scheme and supporting initiatives like the Plugged-in Places scheme; and developing emissions standards (OLEV, 2013a).

5.3.1 Policy as a back seat driver

It would seem that policy, in the UK at least, isn't sufficiently robust to act as a primary driver. In the opinion of TfGM, there is seemingly '*no [UK] government policy*', just '*aspiration, and it keeps moving*' resulting in an apparent melange of automotive industry support, attempted environmental coherence, and hopeful platitudes towards the EU following a breach of air quality measures (EurActive, 2013). That UK government policy may be less than doctrinal was also hinted by Coventry City Council, in that the nature of governmental encouragement – '*incentives rather than instruction*' – meant a reluctance to divert 'core budget' towards low carbon vehicles, especially in the current financial climate.

The seemingly woolly nature of UK government low carbon vehicle policy is perhaps illustrated by responses provided regarding EU low carbon vehicle policy. Toyota cited the EU legislation requiring car manufacturers achieving fleet-average CO₂ emissions of 130g CO₂/km by 2015 (EU, 2009), while Renault's representative suggested that '*if the signals weren't there from Europe and the signals weren't there from France, I don't think anybody would have put together an EV programme, no matter how positive*' adding that '*the policy is being driven at an EU/France level, and we've sort of clung onto the tailcoats of that*' and that adopting an EV or plug-in vehicles policy

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would make it easier for Renault to achieve the proposed fleet average of 95g CO₂/km by 2020. Meanwhile, Tata's representative admitted an unfamiliarity with EU policy and suggested that even with the £5,000 OLEV plug-in grant (OLEV, 2013b), buying an electric car was '*a choice of conscience as much as anything else*'.

It was felt by Nudge Advisory that the global nature of the car industry necessarily resulted in myriad government policies – and not just between the EU and UK – which act as both lever and barrier, with taxation being a perhaps common policy factor, while the differences in UK government policy and those of other European nation was highlighted by POD Point's representative, who cited EV take-up in Norway – a country in which electric cars are hugely subsidised (see Berkeley, 2012) – adding that one needs to take a long-term view of EV ownership in the UK to justify initial outlay.

5.3.2 Policy perceptions

Stakeholders were asked for their views not only on low carbon vehicle policy as a driver, but also for their opinion on policy initiatives/incentives, whether they go far enough, for how long they should be implemented and how they could be improved. Before detailing the responses below, it is perhaps striking to note that one theme which repeatedly arose across all the questions was a need for consistency.

When asked for an overall view of policy initiatives, this 'need for consistency' was aired by Renault, Toyota and Coventry City Council, with the former saying that this was because moving to a low carbon automobility '*is a medium- to long-term objective, and I think policy needs to accept that*'. An example of how a lack of consistency and government leadership can lead to strategies being rent asunder was provided by Coventry City Council, who cited the problems of government failure to agree on standard charging hardware, noting that '*nobody made a choice on the type of plug that they were going to use; they left it to the market to decide and now we've got a mess*'. This observation echoes the thoughts from TfGM in that policy initiatives have perhaps focussed more on technology and less on facilitating and normalising of the EV and considering '*how do we make it more part of the normal landscape*'.

The support provided by government policy was acknowledged by Nudge Advisory who hailed support in terms of incentives and grants, and also in supporting various

schemes and trials while admitting that the government had *‘a difficult task, in that they can’t be seen to be pushing something that the customers don’t want’*, while POD Point said they supported government initiatives as *‘they’ve made the market move in the UK’* in a way that it may not otherwise have done so.

5.3.3 Going the distance

There were mixed views as to the efficacy of policy initiatives, though it is interesting that only the public bodies of Coventry City Council and TfGM suggested that policy initiatives didn’t go far enough, with the former noting that this was because *‘we have a very similar uptake each year’* and expressing a disquiet over uptake, in that *‘everybody else is doing everything they can, the manufacturers are bringing the cars out, we’re putting the infrastructure in – something isn’t right’* and the latter, echoing the premise of their initial Plugged-in Places bid, perhaps positing a solution to the lack of uptake by suggesting that *‘policy should encourage the leasing companies to make it attractive, rather than giving people a subsidy’*. Nudge Advisory’s representative said that *‘the balance is about right, but it has to be flexible’*, while Renault’s representative thought the initiatives went just about far enough. The view from Tata’s representative was that *‘the government have got a fairly good balance’* though this was tempered with uncertainty as to whether prospective buyers should be offered greater incentives than is the case at the moment, a notion reiterated by POD Point whose view was that the OLEV grant wasn’t enough to facilitate a purchase decision, although they felt that Plugged-in Places grants had done their job effectively. Toyota found it difficult to say as to whether initiatives went far enough, only that they were *‘necessary’* and *‘well appreciated’* while echoing the iteration mentioned by Nudge Advisory.

As to how long policy initiatives should be implemented, there was little in the way of finite response from the stakeholders. Indeed, the nearest to a finite response came from Coventry City Council, whose representative suggested *‘five years ... an electoral term’*, whereas more of a consensus came from the representatives of Renault, TfGM and Nudge Advisory who respectively said *‘it should be basically a question of ensuring that the markets established’*, or *‘as long as it takes to address a market failure’* and *‘as long as they are justified ... I don’t know ... it obviously has to be long term’*. This longer view (and uncertainty) was seconded by Tata, whose representative noted that *‘there seems to be so many external factors which can potentially affect the*

uptake of electric vehicles’ and also by POD Point’s representative who thought that a longer time-frame would assist the industry in establishing suitable roots. Toyota seemingly take an even longer view, with their representative suggesting that there may always be a need for support of some degree or description *‘because the thing is there is no end to this story until we have achieved the ultimate goal of no emissions at all’*.

5.3.4 Improving policy initiatives

When asked as to how policy initiatives could be improved and what they would like to see, the stakeholders provided a wide variety of responses. The need for certainty and/or consistency was again mentioned, with Toyota saying that *‘certainty and no short-term changes’* are key, and Nudge Advisory’s representative noting the inconsistencies with in the UK in that, during trials, *‘it was easier to place the cars in London than it was in the Midlands, mainly because of the congestion charge’* which no doubt incentivised participation in the trial more so than in areas without such a levy, and adding that the global nature of the car industry meant that such inconsistencies – regardless of scale – hinder rather than help manufacturers. A need for a degree of certainty in guidance and time-scale was suggested by Coventry city council’s representative, who also suggested that it would be desirable for commercial new build to have *‘a percentage of their parking dedicated for electric vehicles’*, adding that *‘infrastructure needs to be ‘in’ the planning’*.

Infrastructure issues were on the mind of Renault’s representative, who suggested that rather than concentrating on on-street charging, it would be better to look at *‘a motorway network or a trunk road network of fast charging’*, a measure very much in the vein of low-carbon energy company Ecotricity’s ‘Electric Highway’ of fast- and medium-chargers on the UK’s motorway and A-road network (Ecotricity, 2013), while also considering *‘incentivising, subsidising or making free home-charge solutions’* as asking customers to pay for a dedicated home-charging ‘wall-box’ on top of the price of the car has hindered sales (see 5.5.1); indeed, to this effect, the UK government announced that they will meet 75% of the cost of a wall-box, with Renault meeting the cost of the remaining 25% upon orders of their Zoe model (OLEV, 2013c; British Gas, 2013). Another change in the way that policy initiatives are applied was posited by TfGM’s representative who, as noted above, favoured changing the way vehicle grants are applied *‘from one that is a ‘per vehicle’ to a ‘per fleet’*’, along with greater *‘public*

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education [and] skills training’ to promote further use/uptake and regional investment. Perhaps reflecting the limited market presence of their marque, Tata’s representative – while suggesting that current policy initiatives were ‘reasonable’ – said that as their Ace vehicle didn’t qualify under the existing commercial vehicle scheme, a broadening of *‘the number of vehicles that are eligible for the incentives’* would improve sales for them, while POD Point thought that current initiatives were fine as far as they were concerned, though anything that puts more EVs on the road would be a positive move.

An example of a regressive policy initiative, and a lack of the consistency called for by many of the stakeholders interviewed, pertaining to low carbon vehicles was the change in the terms of ‘benefit in kind’(or BiK) regarding company car tax made in the government’s March 2012 budget statement, and which attracted opprobrium from Renault’s representative. Company car tax in the UK is rated according to emissions, and electric cars were rated at 0% company car tax as they possess no tailpipe emissions. However, in the March 2012 budget, it was announced that the lowest two existing emission bands of 0g of CO₂/km (attracting a 0% levy) and 1-75g of CO₂/km, which attracted a 5% company car tax levy, would be replaced with bands of 0-50g of CO₂/km and 51-75g of CO₂/km, and would respectively attract a 5% and 7% levy in the tax year 2015/16, rising to 7% and 11% respectively in the tax year 2016/17 (Fleet News, 2012). Renault’s representative felt that this was a bad move on the part of the government because since *‘most of the vehicles on typical fleets are driven for a couple of years, people are absolutely disincentivised’* as they will now be taxed on electric company cars in the near future, and cited this issue as an example as to why policy initiatives should be exercised over a long period, as suggested by most of the stakeholders interviewed.

It seems that while policy is on the whole regarded as fit for purpose by stakeholders, it can undoubtedly be improved. But if, as noted in 5.2.2.4, policy is crucial to how/if motorists can adopt a low carbon automobility (see 6.6), how well is the pursuit of a low carbon automobility being managed from above? The policy and pecuniary measures adopted by the UK Government to mitigate the impacts of conventional ICE automobility and/or foment an uptake of low carbon vehicles were noted in 2.7, but what do the motoring public know about government instruments or incentives towards fomenting an uptake of environmentally friendly or low carbon vehicles, and do they

know about government policy on low carbon vehicles? In short, do perceptions of cost and inconvenience prevail, or is the low carbon vehicle ‘message’ getting across?

5.3.5 Public perceptions of policy

That a variety of answers were given by the ICE-drivers regarding low carbon vehicle incentives perhaps reflects the ‘free-hand’ approach of the government in this respect. The most common answer – and only given by a large minority of ICE-drivers – was Vehicle Excise Duty (VED) or ‘road tax’ (see 2.7), with one ICE-driver suggesting that *‘other than lower car tax, no I don’t’* (#2). The next most common answer provided was reference to the Plug-in vehicle grant, though only one ICE-driver (hesitatingly) gave the correct figure by saying *‘I think they give you ... is it about five grand off an electric car?’* (#10), with the only other responses in this respect being *‘some partial support for subsidy towards the cost of electric vehicles’* (#3), *‘there was a huge subsidy ... well, not huge, I think there was a £2000 subsidy at one point to get people into environmentally friendly vehicles’* (#4) and *‘some sort of funding to put towards the cost of an electric ... certainly electric, I don’t know about hybrid’* (#7).

Plug-in grant and VED aside, other suggestions were more individual and tentative in nature, such as *‘fuel pricing’* (#5) or that *‘there was a government scheme to basically trade in your car for a new one – seems a while ago now, I don’t know if it’s still going’* (#8), though this latter suggestion was countered by another who stated that while their parents’ car was bought under the UK government ‘scrappage’ scheme of 2009/10, they had *‘never seen anything as like comparable to the scrappage scheme for low carbon cars’* (#11). One ICE-driver suggested that *‘congestion charging obviously is a very notable one in London for its apparent success’* (#3) in reducing congestion and emissions (see TfL, 2008) and another said that *‘something reminds me that there might be less VAT, or no VAT, on the vehicles, but I might be making that up’* (#4). Noting the presence of electric car parking bays in Coventry, one ICE-driver posited *‘I’m presuming you have to pay for them when you’re re-charging your car. If it was free, that would be quite a large incentive, but I can’t imagine that would be the case’* (#1).

Some ICE-drivers said they didn’t know anything pertaining to incentives towards environmentally friendly vehicles, though one said that *‘I would imagine that they’re*

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on a new purchase’ and perhaps cynically suggesting that *‘there’s incentives at different times, like VAT free ... it’s like ‘SCS come and buy your suite this week, it’s a once-in-a-lifetime bank holiday sale and you just tend to think ‘well that’s just bullshit’, really’* to the extent that *‘you become un-bothered by an incentive and you think ‘well, I’ll look at it when I come to change my car’’* (#6) and another said they thought that any incentive programme *‘could do with promoting better as well. I wouldn’t even know where to start or look for that, really’* (#12).

Less was known overall about the government’s low carbon vehicle policy, with the majority saying that they knew little or nothing about it. Cautious responses included *‘looking at reducing CO₂ emissions, the end-of-pipe emissions, and there is ... targets for motor manufacturers to reduce their whole fleet vehicle emission’* (#7) – a notion also noted by another who said that this results in *‘crazy things like Aston Martin buying Toyota IQs and re-badging them as Aston Martins with a decent interior in to try and reduce CO₂ emissions across the line of cars’* (#10) – and *‘I just assume that there’s investment ... to kind of future-proof the motor industry in this country’* (#11), while another ICE-driver thought that the recent economic crisis had prompted the government to *‘start to think that maybe we should make lots of environmentally friendly cars and that will add a boost to jobs and the economy while pretending to be environmentally friendly at the same time. I believe that’s what policy is’* (#1). A ‘hands-off, free-market’ approach was posited by the ICE-driver who said that *‘their policy seems to be to have the Office of Low Emission Vehicles and to have these various incentives and to hope things develop, and to very much say to cities, to regions, ‘come on, develop this, we’ve got some pots of money, we’ve got some various things’ but they seem to be leaving it to the provinces to get on with it’* (#3).

That the ICE-drivers were largely unaware of government low carbon vehicle policy is perhaps unsurprising, as it could be unreasonable to expect the wider public to privy to the finer points pertaining to planning issues, for example. However, that only a minority of ICE-drivers were aware of the plug-in vehicle grant – a policy that can be regarded as a headline policy for consumers – suggests that there is a real disconnect between government and the public regarding potential low carbon vehicle uptake which may prove problematic, especially in light of other potential information sources of low carbon vehicles (see 2.4 and 5.4.4), and perhaps even prove a missed

opportunity given any underlying positivity toward low carbon vehicles (see 5.5 and 6.6).

Why might this be the case? What is known and/or perceived about low carbon vehicles, and how is such knowledge acquired? These questions are addressed in 5.4 and 5.5.

5.3.6 Policy pitfalls

From the sentiments and observations above, it seems that all is not as it could be insofar as policy is concerned, and it would appear that a coherent and consistent notion of a low carbon vehicle policy *per se* is absent with, as noted by TfGM's representative, aspiration seemingly more the order of the day.

This is manifest in several ways. The lack of a standard means of recharging noted by Coventry City Council's representative (5.3.2) is a case in point, and is unhelpful when we have standardised petrol and diesel pumps to replenish ICE vehicles. Short term fiscal policies such as the apparently early, possibly premature, imposition of BiK on EVs (5.3.4) almost seems designed to kill the nascent market for EVs before it has had a chance to be established, and questions must be raised as to whether the government would actually take measures to foment an EV uptake but for EU legislation. They certainly might as well be hiding notice of EV incentives from the wider population, as knowledge of the plug-in grant, for example, seems less than widespread (5.3.5), at least as far as the ICE-drivers interviewed were concerned.

Despite these concerns, stakeholders seemed reasonably content with policy. That said, where policy falls short, it falls vitally short. Investment by manufacturers and infrastructure providers requires certainty, and certainty is something that the UK government at least seems reluctant to provide. Assisting a low carbon vehicle uptake may offend their free-market sensibilities, but this is surely beside the point – such automobility isn't simply about consumer choice. It is about addressing the environmental imperative and ameliorating the environmental impacts of the car (see 2.5), and providing a societal wider benefit that may be intangible to the average motorist (see 5.2.2.2); as such, it is too important to leave to the mercy of ideological machinations that may well be more conditioned to the ICE than are consumers. A

week may be a long time in politics, but environmental returns take much, much longer, and it would be desirable if the UK government could realise that a finite period of time, such as an electoral term, may not be long-term enough to securely and sustainably initiate a transition from an extant, predominately fossil-fuelled, automobility to a low carbon (e.g. electric) automobility.

5.4 Low carbon vehicle technologies – ways of doing and knowing

When we think of low carbon vehicle technology, we may tend to think of hardware such as batteries and/or electric motors. However, a ‘technology’ can also be regarded as a ‘way of doing’ and, in this respect, it is pertinent to assess what stakeholders are doing to facilitate a low carbon automobility, in terms of facilitating the low carbon vehicle technologies discussed in 2.6. In addition, it is useful not only to see what technologies manufacturers are pursuing, and what stakeholders think will power cars in the future, but also to explore what motorists know (or think they know) and subsequently discern (e.g. Lyotard, 1984 – see 3.2 and 3.3) about these technologies which they may encounter in the transition to a low carbon automobility, technologies which will necessarily change the nature of the motor car (see 2.3), *et ergo* the way it is sensed and experienced (see 3.4). We begin with establishing what ICE-drivers would consider to constitute an environmentally friendly car.

5.4.1 Mixed e-notions

Insofar as the particular technologies constituting environmentally friendly cars were concerned, the technology most commonly mentioned by the ICE-drivers was the EV, with hybrids the next most commonly mentioned, followed by efficient ICEs, with gas and hydrogen seldom mentioned. While the sometimes multiple answers provided might suggest that people consider a mix of technologies may apply to a future low carbon automobility, it also appears the idea of an environmentally friendly car may go beyond discrete technological fixes (see 2.5 and 2.6).

General lower emissions were cited, with one ICE-driver suggesting that ‘*you’d have to look at it relative to our average emissions now, let’s say 50% of our average now. It’s still going to be too high in the long run, but anything less than that is just tinkering really*’ (#1) while another alluded to per-passenger/kilometre emissions by replying ‘*a car that has one person in it and is suitable for one person and if you’ve got four*

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people in it and it's for four people, and it does the job and uses as least amount of fuel or produces as least amount of carbon emissions as possible' (#7) and another simply said *'a zero emission car'* citing their *'knowledge of air pollution problems and that sort of thing ... especially in city traffic and suburban town and traffic'* (#8).

Some ICE-drivers felt that there was more to environmentally friendly vehicles than emission amelioration. A need to additionally consider the *'embodied impact of all materials and processes used in creating the vehicle, its whole life cycle'* was mentioned (#3), as was *'using recycled materials'* (#4). One ICE-driver felt that environmental friendliness was *'based on fuel economy ... if it's got really good fuel economy, I think that's good for the environment'* (#12), a view perhaps not shared by the ICE-driver who said *'certainly not a petrol or diesel one'* (#11), a thought echoed by another ICE-driver who said that *'if you're going to go down that route then you're going to look at something that isn't used from a ... from a finite source of fuel'* (#9). While mentioning EVs and hybrids, one ICE-driver also regarded *'keeping the actual car on the road for as long as possible'* – thus minimising the embedded energy in the manufacture of a new car – as an environmentally friendly form of automobility, adding that *'I find the idea of getting a new Prius every two years absolutely appalling environmentally'* (#5), while a similar view to ameliorating the embedded energy of the manufacture of cars came from the ICE-driver who suggested that an environmentally friendly car was *'one that was in shared ownership ... one that's constantly on the road, reasonably fuel efficient, but lots of people can use it'* (#10), such as car sharing or a car club (see 2.7). A potential gap in a wider low carbon vehicle knowledge was suggested by the ICE-driver who admitted that *'I don't know a lot about it ... I mean, I know the Prius and that it's a hybrid car. That's probably all, really'* (#6).

It is interesting to note that ICE-drivers' ideas of an environmentally friendly car went beyond discrete technological fixes (see 2.6.1, 2.6.2 and 2.6.3), considering 'ways' in which a car can be more environmentally friendly, with car-sharing, embedded energy and life-cycle analysis as pertinent to automotive emissions (see 2.5 and 2.6.4). Such considerations at least point to an awareness of low carbon technologies and other modes of car ownership and use; how amenable motorists might be to such considerations will be explored later. In the meantime, how might the stakeholders interviewed match ICE-drivers' notions of a low carbon automobility?

5.4.2 Ways and means

Toyota's approach to sustainable mobility is predicated on three things, namely to *'reduce dependency on fossil fuels ... to reduce carbon dioxide emissions ... and ... to reduce pollutant emissions that affect air quality'* adding that, as the world's largest car maker, *'it's our fight to lead'* the way in tackling the environmental imperative. In believing that *'the principle of hybrid ... is the current best solution and will continue being the current best solution'*, Toyota's plan is to roll out *'full hybrid technology across the range'*; indeed, hybrid technology is available on some models in Toyota's range and, in the UK, *'20% of Toyota's volume are hybrid cars'* already, with *'that proportion rising in the next few years'*.

Renault's approach, similarly, seeks to take a lead but, as suggested by the answer noted in 5.2.1, this is seemingly more about *'being leaders in electric vehicles'* than necessarily leading the vanguard in tackling environmental issues, since *'by 2020, 10% of global [car] sales will be electric vehicles'*. Although in an alliance with Nissan, who produce the Leaf model as their only EV, Renault have adopted a similar approach to Toyota and focussed on rolling out their chosen EV technology across a range of four separate vehicles, from a two-seater quadricycle to a small van and, in a drive to reduce the up-front purchase cost of EVs – *'we benchmark the equivalent diesel vehicle'* – have an arrangement whereby customers subsequently lease the battery at a monthly cost. (Nissan have also recently adopted this purchase model in addition to their existing sales model of purchase of car and battery outright; at the time of writing, Renault only offers a battery-lease arrangement).

Although ultimately declining an interview, BMW did provide a copy of their 2011 sustainability report, detailing aspects from product plans to sustainability policy. In this report, they note how their 'Efficient Dynamics' programme – that is, applying tweaks such as 'Start Stop', regenerative brakes, low rolling resistance tyres and adjustable cooling flaps to existing ICE models – has helped to reduce CO₂ emissions from vehicles across the BMW Group by 30% between 1995 and 2010 (*ibid.*). BMW recently launched their i3 model, available in either pure EV or range-extended guises, and future plans include the introduction of their hybrid i8 sports car and the pursuit of

hybridity and hydrogen propulsion (*ibid.*), and have signed an agreement with Toyota to this effect (BMW, 2013b; Toyota UK, 2013 – see 5.2.2).

Carrying echoes of their visible branded presence, Tata's approach is much more low key, at least in the UK. Though having taken part in the CABLED low carbon vehicle trial with an EV version of their Indica supermini, the only electric vehicle they offer in the UK is a small commercial vehicle called the Ace. Nonetheless, it was felt by their representative that participation in both the CABLED trial and in the collaborative Low Carbon Vehicle Technology Project (Warwick University, 2013) plays some part in facilitating a low carbon automobility.

Having considered the approaches taken by manufacturers (5.2.1, 5.2.2, and above), it is interesting to note how ICE-drivers' notions of environmentally friendly vehicles correspond with such approaches. For example, despite the apparently secondary-driver status of the environment for them, Renault's Eco2 initiative would appear to satisfy the notion of the 'whole life cycle' mentioned by ICE-drivers #3 and #4 in 5.4.1, while BMW's Efficient Dynamics and Toyota's hybrid approach match the need for fuel economy and reduced emissions noted by #1 and #12, while Renault's EV approach fits with the observations of #8 and #9, the latter especially if renewable energy sources are employed in recharging.

Having determined the technologies car manufacturers are currently employing, we can begin to see how cars are becoming ever more complex and potentially more problematic, and may even be costly to remedy. Questions surrounding the durability and reliability of battery cells persist, perhaps fomented by people's experience of laptop or mobile phone Li-ion batteries, and yet how many people consider that the reliability and power capacity of the internal combustion engine diminishes over time? This question alludes to how we have become conditioned to the car and how such technology renders vehicles such as EVs as immature products (see 2.6.4), and shows how an automotive conditioning can act as a barrier to a low carbon automobility.

5.4.3 Tech-knowledges

One of the ways we have become conditioned to the car is that we know (or think that we know) how it works – we turn a key, the engine starts, we change gear, turn the

steering wheel, apply the brakes, refuel when necessary and so on, even though the finer mechanical aspects of these procedures may elude us. Hybrid cars and, more especially, electric cars, can be regarded as a disruptive technology (Barkenbus, 2009 – see 2.6.4). Suddenly cars thus powered are different; they have different moving parts, require different modes of operation, and even different mindsets, altogether a different ‘technicity’ (see 3.4.2.4) requiring new knowledges which subsequently inform a new *savoir* (see 3.2). Will this be a problem precluding uptake? As ‘conditioned’ motorists, what did the ICE-drivers know about low carbon vehicles and the practical implications therein? To find out, ICE-drivers were simply invited to “tell me what you know about...” hybrid and EV technology.

5.4.3.1 Hybrid knowledges

Part 2.6.2 of the literature review considered hybrid vehicle technologies, highlighting the antiquity of the hybrid vehicle concept and examining the differences between series hybrid, parallel hybrid and series-parallel hybrid systems, as well as discussing the latest plug-in hybrid technology, which would appear to offer the best of both worlds.

Responses to the knowledge of hybrids were mainly focussed around their technology with most of the ICE-drivers specifically mentioning that hybrid cars were possessed of two power sources, an internal combustion engine and an electric motor, and while one ICE-driver acknowledged that *‘they come in different styles, don’t they’* (#10), another elaborated that *‘you can have a diesel or petrol engine assisting an electric motor and that’s basically producing the current so it can run on it. Or in reverse you have an electric motor and then when that runs out of power then the petrol or diesel will kick in and take over, and you can actually have them both running at the same time to support each other’* (#4), which broadly summarises the technological approaches to hybridity of Toyota (Yaris/Auris/Prius) General Motors (Volt/Ampera) and Honda (Insight/CR-Z) respectively, as noted in 2.6.2.

The next most common aspect mentioned – by half of the ICE-drivers – was reference to a power switch between the differing ICE and EV propulsion units, although there were a variety of views as to how this switch occurred such as *‘up to about 20mph, it’s electric, as long as you’re steady. If you accelerate remotely hard, or if you’re going*

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above 20, then the petrol kicks in’ (#1) and ‘electric power to start off and then switch to more conventional fuel to ... when they’re in the sort of steady state of motoring, I believe’ (#7), with a little more uncertainty expressed by the ICE-driver who noted that ‘they switch from fuel to electric at certain points in the journey, but I don’t know what those are’ (#2). A large minority of ICE-drivers mentioned that hybrids employ regenerative braking technology, whereby ‘they recycle energy from braking’ (#5) although another noted that such energy regeneration technology wasn’t just the preserve of hybrids, stating that ‘even on, like, sort of non-environmentally friendly cars you get things like these energy recovery systems, like I know on the Audis and stuff’ (#12).

Other hybrid knowledges were more fragmented, with one ICE-driver noting the low emissions of hybrids, saying that *‘through towns and what have you, they’re not emitting any carbon, or very, very low levels of carbon’* (#8) and another mentioning hybrid’s image and that it was *‘interesting to see how they’ve become a poster child for environmentalism from both sides of the debate – a poster child of hate from one side, and desire and status from the other’* (#3) while another expressed the opinion that *‘if the technology’s there and it’s working right then, yes, that would be the way forward, but you’re still using petrol – that to me negates the environmental friendliness of it’* (#9), sentiments echoed by the ICE-driver who said *‘I know if you drive one hard, you get rubbish energy ... rubbish fuel efficiency, you might get better from a much more ... car that’s perceived as more environmentally unfriendly’* (#5). An uncertainty about hybrids was conveyed by others, with one admitting to knowing *‘not a lot, not really. I’d assume they’re like a mix of both, but that’s about it’* (#11) while another said *‘not a lot. Other than they run on different fuels’* (#6).

It was noted in the literature review that there has previously been concern over the benefits of relatively complex hybrid technology compared to more conventional modern diesel cars with regard to CO₂ emissions (Clean Green Cars, 2010). However, despite such concern, hybrid vehicles seem to have attracted little of the comparative comment and opprobrium directed at EVs in both academia (e.g. Hawkins *et al*, 2013) and also a wider news/print media (see 5.4.4) which repeatedly critiques cost, range and charging infrastructure as the three main barriers to EV uptake – for example Shirouzu *et al* (2013) and Hanlon (2011) who respectively describe EVs as a ‘dead end’ and a

‘waste of space’ – and so it is interesting to consider the responses provided by the ICE-drivers interviewed and see the extent to which these concerns are replicated.

5.4.3.2 EV knowledges

The history, technology and (im)practicalities of EVs were detailed in 2.6.3, where mention was also made as to their characteristics and compromises inherent with EV technology thus far, although it should be noted that battery technology continues apace.

The specific aspect of EVs most commonly mentioned by ICE-drivers was battery range, which was highlighted by half of the ICE-drivers although surprisingly, given how the two aspects are inextricably linked, only a minority also mentioned charging infrastructure. One who mentioned both aspects noted simply that *‘you can’t go very far, I think, until you need to recharge them, there are limited charging points’* (#2), while another went further, saying that EVs had *‘a very short span of it going from charge to empty, although I understand that range is increasing all the time’* before adding that *‘I know we’ve got power points in Coventry that people can pull up and charge their vehicles at. I would imagine they are very scarce nationwide, so I would be concerned about owning a vehicle that I could only get to Nottingham and then think ‘how am I going to get home’*” (#6). One ICE-driver also highlighted that the battery range *‘does change considerably depending on the driving conditions, on how cold and whether you need lights, windscreen wipers going and stuff like that’* (#7) while another proffered a solution to limited range and charging time, saying that *‘as far as I understand it, sort of hydrogen’s going to be a fix for the problem, but that’s still difficult to store and manage and use, I think’* (#12).

The noise (or lack of it) from EVs was mentioned by four ICE-drivers, one of whom from first-hand experience said they were *‘very quiet’* (#6) whereas another ICE-driver came to the conclusion that *‘I don’t think electric cars will make that much difference to noise’* because, with conventional cars, *‘most of the noise really though, certainly at lower speeds, is literally from the friction of the wheels on the road more than the actual engine itself’* (#1). Given the way that it is highlighted by a wider media (see 5.4.4), it is perhaps surprising that only a minority of ICE-drivers mentioned ‘cost’ when asked what they knew about electric cars, and then primarily with reference to

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purchase cost, with one noting of the Tesla Roadster that it *‘is based on a Lotus [Elise] and is twice ... two or three times the price’* (#5) while another expanded on their initial optimism regarding the Nissan Leaf, saying *‘when that came out, I thought ‘oh nice one’ because, for me, that’s fine – a short-range vehicle would be okay for me because I don’t go very far every day and, you know, it would save me money, but it ... I’m not paying thirty grand for a Nissan Leaf. Mitsubishi do one [the i-MiEV] that’s also thirty grand, but the same sort of chassis in a car where the internal combustion engine is half the price, and you think ‘whoa...’* (#10).

Some ICE-drivers mentioned the lack of emissions from EVs, with one noting for example that *‘it must be better from an air pollution point of view, certainly in the vicinity of the car, even if not perhaps the overall picture because you still have to have the power station’* (#1) although another thought that, despite this, *‘they’re potentially more environmentally benign than fossil fuel powered vehicles. You can’t overlook where the electricity has come from, which is more an infrastructure argument, but it’s still quite significant’* (#3). Other individual aspects of EVs were also highlighted, including some concerning the battery, for example the contentious nature of *‘the resources that go into the batteries’* (#5) or that it *‘is a long process to get the charge back up so it can run again’* (#4) while another said they were *‘sort of unsure of ... long term reliability’* of EVs (#8).

One ICE-driver proposed a historical ignorance around EVs, saying that *‘most people don’t think about the fact that they’ve been around for ages’* (also see 2.6.3) and added that they regarded EVs as *‘a significant growth section of vehicles’* and that *‘there’s a lot of technological development both around the vehicles themselves and charging technology and battery technology. They could potentially be the next big paradigm for vehicles, but they might not. They said that about fuel cells as well’* (#3) while the image of EVs was mentioned by the ICE-driver who asked *‘have you seen one of the G-Whiz cars? I mean, it’s just embarrassing isn’t it, really’* (#10). Citing the recent CABLED trial, one ICE-driver said *‘I know there’s the Smart electric cars around, I know they’re getting a lot better’* regarding range but couldn’t expand further (#9), while another said that their knowledge was limited to *‘just how they don’t require petrol, they require electricity and charging’* (#11).

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It is interesting to consider how, possibly spurred by wider media coverage posited above, knowledges and opinions regarding EVs were perhaps more comprehensive than was the case with hybrids, not only with respect to the answers given here, but also in the responses to questions about perceived experiences of EVs (see 6.6), which points to a reach and power of the media insofar as low carbon vehicle knowledges are concerned, not all of which may be positive, as illustrated by Shirouzu *et al* (2013) and Hanlon (2011). Whatever the influence or source of these knowledges, if we consider the ICE-drivers' answers thus far, we can see that there potentially is a wide range of public knowledge and opinion pertaining to low carbon vehicles, even if some of the knowledge isn't particularly in-depth or even accurate; nonetheless, it does point to a degree of wider engagement and the potential for an amenability towards low carbon vehicles.

News media has the potential to inform a large minority of people, around 40% according to questionnaire returnees data (see 6.4). But what exactly, in the capacity of a knowledge 'gatekeeper' (see 2.4), has the media made of EVs and hybrids? Has the way that they have reported and presented low carbon vehicles, especially EVs, been positive or negative (see figure 3.1), and is there a difference in the way that the two technologies have been reported that may, in turn, influence opinion and therefore uptake?

5.4.4 Media matters

Most of the stakeholders interviewed noted that the media tended to be less than positive when it came to low carbon vehicles. Toyota's representative observed that interest in low carbon vehicles in the motoring press was greater than in the past and was growing; however, the nature of this growth in interest in low carbon vehicles is perhaps a moot point, as it was noted by Renault's representative that *'too often, things are relegated to a few columns in the middle of the paper, and the only time they hit the headlines is when it's Top Gear, or a fire'*. This focus on the negative side of the low carbon vehicle debate was echoed by Coventry City Council's representative who said that *'the media love a story, so if it's not all-singing, all-dancing and changing the world saving people's lives, it's negative'*, while POD Point's representative said that while there were positive and negative responses from the media, there was *'a lot of noise'* from those who were sceptical about electric cars. TfGM's representative

thought that the media *‘seem to have got past the sneery, cynical stage’* albeit with some cynicism as to whether EVs will ultimately work, and felt that editors – and not journalists – were the root of this because, whether public or private sector, *‘if there’s a chance to have a poke at an organisation ... they ain’t going to miss the opportunity’*. They also said that while the media printed press releases, there was seldom any interest in following the story up further.

Tata’s representative felt that media response was dependent upon which aspect of the media was passing comment, observing a *‘general sense of openness’* from the more serious media, adding that coverage by the BBC’s Top Gear programme was *‘as cynical as you’d expect’*, while Nudge Advisory’s representative suggested that the media *‘tends to be a little sceptical’*, focussing on the cost and battery-range of EVs (as also noted in 5.4.3.1), with any scepticism stemming from expecting EVs to *‘perform the role of every car’*, adding that *‘if that’s your aspiration, it’s going to fail and that seems to be what the media see’*, despite the fact that people have always had different cars – big cars, small cars, sports cars, off-road vehicles – for different journeys and purposes *‘and low carbon vehicles are no different’*, suggesting that if the media instead looked at the electric cars *‘as perhaps second vehicles in a household, then they would see it far more positively’*.

The way that EVs have been represented on BBC’s Top Gear has been noted by both stakeholders and ICE-drivers (see also 5.4.5.1), with one ICE-driver echoing the thoughts of ICE-driver #6 in suggesting that EVs were *‘portrayed very negatively on TV as well, I mean, the likes of Satan himself, Jeremy Clarkson...’* (#10), but what of news/print media? As noted above, news/print media coverage is perhaps less than positive, with any negative aspect of electric vehicles being seen to be pounced on by a cynical press, but is this necessarily the case? How do the news/print media report EVs and hybrids?

In a time period spanning 15 months, between the beginning of 2012 and the end of March 2013 – the end of the ICE-driver and stakeholder interview process – there were 161 articles in total pertaining to EVs and hybrids in the motoring pages of the Daily Mirror, the Sun, the Daily Telegraph and the Sunday Times, varying in size from brief, circa 50-word ‘snippet’ pieces to full double-page spreads. Of these 161 articles, 78

were about EVs and 83 were about hybrids; there were also two articles about hydrogen vehicles. Perhaps surprisingly, there was a fairly even split between those largely positive about the various low carbon technologies described (38) and those adopting a more negative tone (22), with some adopting a tone that could be described as ambivalent (29) and some, mainly shorter pieces, that were merely descriptive, with some akin to a press release (70).

Looking at EVs, we find an even split of the 78 EV articles were positive (16) and negative (16) in tone, while 14 articles were ambivalent; a further 32, mainly smaller, pieces were descriptive. A regularly dissenting voice as far as EVs are concerned can be found in automotive journalist Mike Rutherford, formerly of the Daily Telegraph and more latterly of the Sunday Times, who has repeatedly cited cost and range as barriers to EV viability, employing article headlines such as ‘*EVs are just not economical*’ (Rutherford, 2012b) and ‘*You can’t beat petrol or diesel*’ (Rutherford, 2012c – see also Rutherford 2012a; 2012e). He has accordingly bemoaned EV viability, noting that “the biggest car-related disappointment in all my years at the Telegraph has been the obscenely overpriced all-electric car” (Rutherford, 2012d).

The purchase cost of EVs is widely cited as a barrier to uptake, and was an issue mentioned by ICE-drivers (see 5.4.5.1). Perhaps surprisingly, purchase price was mentioned in only 27 of the 78 EV articles assessed. Of these occurrences, seven were made with a positive tone, largely as a result of Renault’s decision to lease batteries rather than include them in the purchase price, and 14 articles adopted a critical or negative tone, with 6 other articles were either ambivalent or simply quoted prices; the government’s £5000 plug-in grant was mentioned in only 13 of the 78 articles. Offsetting contemporary purchase price issues, low running costs are a recognised benefit of EVs compared to ICE cars, and yet running costs were mentioned in only 11 articles of the 78 articles, with only four of them positively; five articles were critical, citing the depreciation of EVs, and two were ambivalent.

Another regular source of EV dissent is found in the Daily Mirror’s motoring pages, courtesy of Top Gear’s Richard Hammond, who once began an article about former Formula 1 designer Gordon Murray’s Teewave AR1 concept with “nice new sports car – shame it’s electric” (Hammond, 2011). He has pondered the rationale of the Morgan

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Plus-E electric concept, noting that “the reason you have a Morgan is to thrash around the countryside, tour France, go to Goodwood. Not to whirr about town where an electric vehicle is most useful” (Hammond, 2012b), and excoriated the Renault Fluence (see figure 5.1), damning its looks and dynamics – “Any car should be nice to look at. The Fluence is super-bland. A car should be fun to drive. This one isn’t” (Hammond, 2012c: 55) – and its range and charging times, noting that “you have to twiddle your thumbs for up to eight hours waiting for it to recharge” (*ibid.*) [the Fluence is unable to use newer rapid chargers].



Figure 5.1 Renault Fluence – critiqued by Top Gear’s Richard Hammond
(author’s photograph)

He also seems to goad the EV movement, for example noting that, in 2011, “764 electric vehicles were sold. More Ferraris were bought in the UK” (Hammond, 2012d), and remarking that when the record set for the largest number of electric vehicles gathered in one place, whereby “a convoy of 225 [Nissan] Leafs – which must be almost half sold by Nissan – drove around Silverstone” (Hammond, 2012g) in 2012, “apparently cars came from as far as Aberdeen to take part – presumably on trailers” (*ibid.*).

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These quotes appear to critique the range, practicality and success of EVs, and they weren't the only ones to do so. The battery range of EVs was mentioned in 34 of 78 articles, with 15 of these doing so negatively. It is perhaps surprising that 18 articles were either ambivalent or simply quoted the manufacturers' stated battery range – might such ambivalence suggest an acceptance of the limitation of contemporary batteries? One article actually quoted positively about EV range, specifically that of the Renault Twizy, and hints at the importance of the *raison d'être* of a particular vehicle, as well as to managing expectations. Insofar as EV sales figures, reference was made to these in 12 articles, 11 of them negatively and none positively.



Figure 5.2 Mitsubishi iMIEV, identical to the Citroën C-Zero described by Sayle (2012) (author's photograph)

An example of an ambivalent article concerning EVs was a slightly tongue-in-cheek piece written by Alexei Sayle about his experiences of a Citroën C-Zero, a small electric car almost identical to the Mitsubishi iMIEV (see figure 5.2) and Peugeot iOn, bar the badges. In the article, he states that he found he was “running out of charge long before 81 miles [the maximum range] had gone by” (Sayle, 2012: 2), describes one attempt at charging when he “ran some wires from my house across the pavement ... I had visions of a pedestrian tripping over my extension and me then being featured in an advert for Injury Lawyers R Us, then it began to rain so my wife made me disconnect

the tangle of sparking cables” (*ibid.*: 2-3) – a description which perhaps fuels recharging myths and misconceptions – and suggesting that charging issues mean that “being dependent upon the kindness of strangers does seem to be a part of the electric car experience” (*ibid.*: 3), an observation which begs questions about the freedom and autonomy that is perhaps the essence of the motor car. On a more positive note, he describes how “to drive, the C-Zero is a somewhat different experience to a normal car: there is terrific acceleration which is weirdly achieved in more or less complete silence” (*ibid.*), and the ambivalence of the article is underlined in his conclusion that “the C-Zero is unquestionably an enjoyable and different car to drive, but because of issues of range and charging, electric cars are not quite there yet” (*ibid.*).

One thing that is apparent in the newspaper coverage of electric vehicles is that any positivity shown towards electric vehicles by the press is seemingly dependent upon the electric vehicle being reviewed. For example, Richard Hammond reminded readers that “as you know, I don’t think much of electric cars” (Hammond, 2012f) before admitting that, with more than 700bhp, the Mercedes Benz SLS Electric Drive “might be quite good fun to drive” (*ibid.*), as if to suggest that EVs need excessive power to be somehow acceptable, a power-notion repeatedly intimated by the Top Gear television programme (see Tranter & Martin, 2013) and alluding to an extant automotive conditioning (see 2.3) towards a “bestiary of power” which Barthes (1957 [1972]: 89) deemed a *passé* mode by which to fete the car.

One electric car that has been glowingly reviewed is the Tesla Model S (see figure 5.3), a car which led Ben Oliver to suggest that “in the future, the new Tesla Model S might just be remembered alongside the Mini or the Ford Model T as an automotive gamechanger” (Oliver 2012: 2), hinting at the revolutionary design and engineering potential of EVs noted by Sir Clive Sinclair (see 2.3) in that “few cars have ever combined so many radical innovations in one new design” (*ibid.*) such as “drive by swipe ... wireless updates ... minimal mechanics ... superior aerodynamics ... unique crash structures ... huge cabin” (*ibid.*), all of which points to the Models S qualifying as a ‘disruptive technology’ (see 2.6.4) affording us new technicities (see 3.4.2.4), new ways, of performing automobility.



Figure 5.3 Tesla Model S – much praised by the media
(author's photograph)

Although an expensive car with prices beginning at just under £50,000 after the UK Government's £5000 plug-in grant (Tesla Motors, 2014), the Model S can, in contrast to lesser EVs, almost be regarded as competitively priced in comparison to more conventional rivals such as the Audi A8, BMW 7-Series and Mercedes Benz S-Class, especially in light of the innovations mentioned above.

At the other end of the EV spectrum from the Tesla Model S, press reaction has been broadly positive towards Renault's Twizy quadricycle (see figure 5.4), a vehicle akin to a four-wheeled scooter which has been described as "a 7ft 8in-long bundle of fun with a top speed of 50mph that turns as many heads as a supercar" (Gibson, 2012c: 4). In accepting that is "really a vehicle that you'll use mainly in towns" (Hammond, 2012e: 60) and describing it as "obviously a bit of fun" (*ibid.*), Richard Hammond's suggestion that "you won't stop grinning the first time you drive one" (*ibid.*) directly links to Thrift's second definition of affect and the face as "affect in process" (Thrift, 2004: 61 – see 3.4.1.2), and he ultimately concludes that it is "the only electric vehicle I've enjoyed driving ... hats off to Renault for having the sense of humour to have built it and for making the motoring world a slightly more interesting place" (Hammond, 2012h).



Figure 5.4 Renault Twizy – focussed, authentic and fun (author’s photograph)

Not all coverage of the Twizy was positive, with charging and security issues leading Baker *et al* to conclude “it’s the right idea, but with all the practicality of a chocolate teapot” (2012: 13), an observation that perhaps says more about UK society and EV attitudes than any intrinsic failings of the (somewhat focussed) Twizy itself.

The positivity of the remarks made about The Tesla Model S and the Renault Twizy allude to the importance of the nature, the essence, the *authenticity* of an electric car to its successful execution and ergo any future acceptance. For example, having earlier slammed the Renault Fluence, an electric car adapted – like the Citroën C-Zero described by Sayle (2012), above – from an existing ICE model, Hammond concedes that, in contrast to the Fluence, “the Nissan Leaf, which also has the inconvenience of being electric, is a very nice car to drive” (Hammond, 2012e: 60). As noted in 2.3, the Nissan Leaf – and the Tesla Model S – was designed from the ground up to be an electric vehicle, as was the Renault Twizy, which is unashamedly a focussed, short-haul runabout highlighting how EVs are a *different* proposition. The positivity engendered by such purpose-engineered vehicles suggests that notions of essence and authenticity are as crucial to a car’s nature or being as they are to our own (see 3.4.1.2), notions which are, or at least form, a key aspect of the Gestalt of the car. Additionally, the

execution of the Renault Fluence and the Citroën C-Zero hint at being conditioned to the car and suggests how such conditioning can be a bar to the automotive and technological progress demanded by the environmental imperative.

One aspect of newspaper EV coverage that was strikingly absent was that of emissions. The content analysis found only two references to emissions, and on both occasions the message was negative – once as a result of doubts as to the environmental friendliness of EVs raised in a then recently-published book (Dunn & Tobin, 2012), and again in an article actually about an ICE (Clarkson, 2012) which noted that EVs energy comes from a largely fossil-fuelled electricity grid (e.g. Hawkins *et al*, 2013 – see 2.5). Not once was fact that EVs have zero tailpipe emissions, or of the local air quality benefits therein, mentioned – could this emission omission contribute to the intangibility of the environmental benefit of EVs suggested in 5.2.2.2?

Coverage of hybrid vehicles was slightly more affirmative, with 22 of the 83 articles thereon being positive in nature, compared to 8 that were negative, 15 that were ambivalent and 38, again mainly smaller articles, which were merely descriptive. As with EVs, it appears that any positivity shown is dependent upon the vehicle being reviewed, for example the Toyota Prius being described as “still a hairshirt on wheels” (Frankel, 2012: 6), an comment which, insofar as ‘the ultimate apparel’ (Nieuwenhuis, 2008) is concerned, suggests that the Prius represents an automotive sartorial Puritanism. The most positivity, hence the greater proportion of affirmative articles compared to EVs, was reserved for coverage of the Vauxhall Ampera plug-in hybrid. However, that the Amperas battery range can exceed most trips has prompted reviewers to indeed see it as an electric car without the range anxiety (although its battery range is rather less than that of EVs such as the Nissan Leaf) leading to claims that the Ampera is “a battery car that doesn’t leave you stranded at the side of the road and a petrol car that hardly ever needs to run its engine ... what it does is change the way we think about cars” (English, 2012c: 3) – a notion apposite to this study (see 2.3 and 3.4) – even though a price of around £30,000 after the government plug-in grant renders it “hardly the first choice for budget family motoring” (*ibid.*). The Sun’s Ken Gibson was similarly effusive, suggesting that “the Ampera really does rewrite the rule book for electric/hybrids” (Gibson, 2012b: 5).

An interesting ambivalence in media articles about hybridity concerns both positive and negative views of the diesel-engined Peugeot 3008 Hybrid-4, in that while Gibson waxes lyrically on the economy, emission and tax benefits of hybridity (Gibson, 2012a), Hammond decides that the reason that car manufacturers haven't tried to marry diesels with hybridity before lies in the 3008s driving manners, cost and complexity, and highlighting that "the standard diesel model is better on fuel and £5k cheaper" (Hammond, 2012a: 61).

Price and fuel economy were the two most negatively reported aspects of hybridity, with 18 of the 83 articles bemoaning the purchase price of hybrids compared to conventional ICEs, with 16 simply mentioning price, and two making positive price comparisons, and at opposite ends of the hybrid spectrum – the Toyota Yaris Hybrid and the Mercedes Benz E300 Bluetec Hybrid. In an interesting parallel to EVs, six of these 18 negative price comparisons pertained to the Vauxhall Ampera and three to the Toyota Prius Plug-in; eight articles mentioned the government's £5000 plug-in grant for which cars such as the Ampera and Prius Plug-in qualify. Negative comparisons were made with regard to fuel economy in 11 articles, particularly in comparison to conventional ICE diesel models, although another 11 articles made positive fuel economy comparisons and a further 27 were either ambivalent or simply stated official economy figures.

It seems that media coverage of EVs and hybrids is a mixed bag. Some of the reviews and opinions expressed are positive, some of them are negative, and all to varying degrees. While such an approach is perhaps routine in an automotive press that may disagree as to the merits of particular cars, there is a difference here in that the merits of low carbon technologies are critiqued here too. Cost is repeatedly cited as an issue with both technologies, along with the battery distance range of EVs, it is interesting that the EVs and hybrids viewed more positively are those that were innately 'authentic' vehicles (see 3.4.1.2) such as the Vauxhall Ampera and the Tesla Model S, rather than modified 'afterthoughts' such as the Renault Fluence and Citroën C-Zero mentioned above, and the Tata Indica driven by the CABLED trial drivers (see 6.6.1). This may bode well for coverage of hybrids and EVs in the future as their respective technologies progress, and hybrids and EVs become more 'authentic', which may also permit some

automotive writers to look beyond the automotive parameters to which they, and us, have become conditioned.

5.4.5 Facilitating a low carbon auto/mobility

As to future ‘ways of doing’, the three car manufacturers interviewed were asked as to what low carbon vehicle technologies they were planning to pursue. Perhaps unsurprisingly, ‘*EVs are very much at the forefront*’ of Renault’s low-carbon plan, and ‘*low emission diesel is probably the second plank of it*’. Although not privy to future plans, their representative didn’t think that Renault would go down the hybrid route, rather that development work would concern ‘*the next generation of batteries*’ and while noting that fuel-cell technology is being explored within the Renault-Nissan alliance, they – along with others interviewed – expressed some uncertainty as to whether such technology would come to market.

Whatever route Renault may take, it is interesting to ponder if their pursuit of EVs – or, more accurately, the Renault-Nissan alliance’s pursuit of EVs – will lead Renault to become synonymous with electromobility in the same way that Toyota have become synonymous with hybridity due to their pioneering of hybrid technology, and what impact that may have not only upon how the Renault marque or brand is consumed, but also how the technology itself is consumed.

Toyota’s approach is to extend their hybrid petrol technology – as opposed to the hybrid diesels offered by Citroën and Peugeot – across their range of vehicles, including plug-in hybrid technology as offered on the Prius, with an aim of ultimately ‘*normalising the technology*’; longer term. Toyota are also pursuing fuel-cell technology and hope to have their first such-powered vehicle available by 2015 (Toyota Global, 2013). Tata’s representative, meanwhile, regarded the question as ‘*commercially sensitive*’ and didn’t provide an answer although, as noted earlier, suggestions regarding Tata’s low carbon vehicle plans have since been quoted in the media (see The Economic Times, 2013).

Having considered the current and future technologies of low carbon vehicles, and how people perceive them, it is pertinent to consider the less obvious and/or immediate ‘ways of doing’ as seen by the non-car-manufacturer stakeholders, as part of the

autopoiesis of the system of automobility (Urry, 2004) with respect to an EV automobility, as posited in 2.8.

It is interesting to compare the responses of two local authorities – one with an established EV infrastructure, the other not – and gauge the difference that an EV infrastructure can have on opinion. Coventry City Council *‘have been a full supporter of electric vehicle projects’* and sought to take advantage of such government funding when it has been made available although, in the current financial climate, cost restrictions have precluded expansion. Nonetheless, as members of the CENEX Plugged-in Midlands Scheme and partner in the CABLED project, the council are looking beyond Coventry, to Warwickshire, Northamptonshire and Leicestershire, and are in the process of *‘upgrading our public [charging] infrastructure to the Plugged-in Midlands spec’* with the aim of providing a standardised system of charging points across the region; in addition, they are also giving attention to a wider low carbon transport, in that *‘we’ve got the electric bus, we’ve paid for the infrastructure for that’*. Transport for Greater Manchester (TfGM) meanwhile noted an interest in low carbon vehicles *‘partly about air quality and emissions’* but also *‘in the potential ... creation of economic value, skills and employment’*. Like Coventry City Council, TfGM have looked at a wider low carbon transport system and have acquired over 100 buses under a ‘green bus fund’ which *‘is more than any other local authority outside London’*, resulting in *‘30 or 40 hybrid double-deckers on the streets of Manchester’*. TfGM also led Greater Manchester’s bid for Plugged in Places funding which, interestingly, looked away from a conventional *‘rush to get posts in the ground’* approach, with a rather more fleet-based stance – private/public sector fleets, taxis – adopted, taking *‘duty cycles and attractiveness and corporate responsibility, PR and so-forth’* into consideration. At the time of interview, the bid had been unsuccessful; however, the Greater Manchester Electric Vehicle Scheme was finally officially launched on July 26th 2013 in a more conventional posts-in-the-ground mien, with 250 charging posts covering the ten local authorities within Greater Manchester (TfGM, 2013).

Sustainable transport consultancy Nudge Advisory have a seemingly more non-committal attitude to low carbon vehicles, in that while *‘it obviously has a place in the world’* it is possible that not *‘necessarily all personal transport will be low carbon’*. Indeed, it was claimed that *‘our role as a company is not to encourage or discourage*

per se’; having said that, they also noted that *‘our involvement in low carbon transport has convinced us that it’s a very positive move’*. Electric charging point provider POD Point has, perhaps predictably, an enthusiastic attitude towards low carbon – especially plug-in – vehicles, as their business is predicated on supplying domestic, commercial and public charging points, which number over 900 at the time of writing (POD Point, 2013). In addition to their core business, their business development director noted that they *‘shout as loudly as we can in the media and the press about what we’re doing’* as a response to a perceived lack of awareness about electric and plug-in hybrid vehicles – evident from 5.3.5 – and the potential reach of media with its decidedly mixed low carbon vehicle messages (5.4.4).

Thus far we have noted stakeholder rationale regarding low carbon vehicles and policy, and considered not only what motorists know (or think they know) about low carbon vehicles, but how such knowledges are managed and disseminated by journalistic gatekeepers. In exploring these issues together with a proposed stakeholder facilitation of low carbon vehicles (above), we can begin to shed some light upon the prospects for a potential autopoiesis of the system of low carbon automobility, posited in 2.8 and mentioned above.

5.4.5.1 Green for go?

When asked what they thought of the idea of environmentally friendly cars generally, the ICE-drivers were overwhelmingly positive towards such vehicles, although they also raised some interesting caveats. One ICE-driver thought that environmentally friendly cars were *‘essential’* because *‘the fuel’s going to run out ... the climate change the world is facing, that is affected by motor vehicles ... we also need to think about another way of moving around because the roads are filling up’* (#4), sentiments echoed by another who said such vehicles were a *‘very good idea. This is the way we have to go’* although *‘to some extent it’s a bit of a red herring as a way of reducing the environmental impact of mobility because ... there’s loads of other ways we should be doing rather than just getting in our cars’* (#7).

A positive view was also expressed by the ICE-drivers who thought environmentally friendly vehicles *‘a good idea’* (#3) and were *‘very keen’* (#8), while another went further to say that they *‘love them! I think there should be more of them’* (#9). A more

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measured response came from the ICE-driver who said that *‘they’re not a pointless exercise’* and thought that environmental concerns *‘will increasingly be what cars sell on because I think people are more environmentally aware’* (#6); however, they also suggested that *‘Top Gear hasn’t helped over the years’* and citing an episode – specifically Series 17, Episode 6 – in which presenters Jeremy Clarkson and James May took two electric cars, a Nissan Leaf and a Mitsubishi i-MiEV, on a trip through Lincolnshire, a county bereft of EV charging points at that time (Top Gear, 2011), adding *‘it’s not helpful is it, that type of exposure, it just sticks with people. If you haven’t got much knowledge about it, which I haven’t, they’re the things that you remember’*. (Incidentally, this wasn’t the only time that this particular episode of Top Gear was mentioned by ICE-drivers.)

This observation highlights the importance of vehicle trials such as the CABLED trial in promoting EVs, especially when you compare the response from bodies or areas where no such trials have taken place. For example, the representatives from Tata, Coventry City Council and Nudge Advisory, who were involved in the CABLED vehicle trial, all reported that the response from the members of the public who had taken part in the trial was overwhelmingly positive, with the representatives from Coventry City Council and Nudge Advisory reporting that participants actually wanted more time with the cars after the trial had finished, while Tata’s representative noted how *‘people loved the fact that they were doing their bit for the environment’* while some *‘loved the financial benefits of charging the car’* as opposed to paying for petrol which resulted in some admitting that *‘they drove the cars more aggressively and less economically ...because they knew how cheap they were to run’*. This last observation has parallels with American car culture in the mid-late 20th century, in that the price of petrol in the US at the time permitted a taste for large, powerful cars, almost simply because they could.

By way of comparison, there have been no low carbon vehicle trials in the northwest of England, where TfGM’s representative discerned *‘a sort of interest, but there’s nothing ... I don’t detect any great shift in desire to get hold of them’* – an observation which contrasts sharply with the findings of the CABLED trial – and noting that *‘the perception is almost ignorance’*. Such perception was echoed by Renault’s representative, who admitted that their ‘ZE Tour’ of 2012, where Renault took their EV

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models across the UK so that the general public could get a closer look and even take a brief drive in them, made them realise *‘how little people understand about the technology, the performance of the vehicles, the absolute basics of charging the vehicles’*, citing the same episode of BBC’s Top Gear (Top Gear, 2011) as did ICE-drivers #6 and #10, where popular EV concerns regarding range and recharging infrastructure were exaggerated for entertainment, and suggesting that while there are people who are very pro-EV, *‘the general public are probably two or three years behind these people’*.

While Toyota acknowledged that response to their hybrid models had been *‘very good’*, POD Point’s representative echoed Renault’s recognition of the existence of EV enthusiasts, while also noting *‘a relatively vocal anti-lobby’* and suggested that, when it comes to electric cars, *‘you’ve probably got 5% of the population are pro, 5% of the population are very against, and 90% of the population are ... undecided’*, an observation which, again, highlights the importance of affording people the opportunity to physically and practically experience electric vehicles, to look beyond the brochure and the internet, as a means to challenge a conditioning to the car.

Not only will such opportunities allow motorists the chance to drive EVs but, as mentioned by one of the focus groups, would provide an increased visibility of electric cars, which can foment interest and so facilitate uptake. Such visibility is one of the functions of the low carbon vehicle trials such as CABLED, which can also be facilitated if bodies such as utilities or the Post Office adopt them on a large scale, although it was suggested by one group that:

AD_CCC: *They’re probably better off paying a load of us to drive their cars around cities, than spend any money on advertising.*

JW_CCC: *...pick out half a dozen people, you know, say ‘here’s your free electricity when you get to work because we’ve got the meters around the city and parking ... when you think how much parking is, and I think parking’s free isn’t it if you’re recharging...*

AD_CCC: *It is...*

JW_CCC: *...which is a plus, if you give a sample group of people, that’s when people will see them, they’ll see them in use, they’ll see them every day, and that’s*

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when people will think about when they're going to purchase a car. Because, as you say, it's the car that looks good on the street that you think 'oh, I wouldn't mind one of them'...

This latter suggestion emanating from one of the focus groups is borne out from the experience of those who took part in the CABLED trial, such as EV_#3 who noted that their trial vehicle attracted attention and said that people were interested in it and asked questions about it (see 6.6.3).

Cost concerns were raised by an ICE-driver who said *'I like the idea of them but, just like the high value cars that I can't afford ... they're inaccessible to Joe Bloggs'* (#11) and another who thought that *'the models on the market at the moment are incredibly expensive for what they offer and I'm a little bit dubious of the environmental benefit of them'* (#5). One ICE-driver thought that *'they're a limited choice'* and that *'they don't necessarily have the power or endurance to go as long a distance as I might want to go in a journey'* (#2) while another said *'I think they're great, I really do'* adding that, despite their own more performance-orientated personal mien, *'I'm not against them in any way ... if car manufacturers can still produce cars like [their Audi S3] but still hit their targets for the environmental side ... it'd be a fantastic thing'* (#12). The notion of an environmentally friendly car was called into question by the ICE-driver who thought that *'it's a bit of an oxymoron isn't it? It doesn't exist ... I don't think you can have a car and be environmentally friendly'* (#10) while another added that *'I would much rather prefer that people not use cars at all but, if they must – and they probably will for a number of decades to come – then yes, very much so'* (#1).

The existential notion of an environmentally friendly car is interesting, and goes back to the essence and nature of the car and whether it can still be used and regarded in the way we have become conditioned to (e.g. 2.3, 2.5 and 2.6).

When it came to the idea of owning and driving an environmentally friendly car, again the response from the ICE-drivers was positive but with caveats, with the most commonly mentioned caveat being 'cost'. One ICE-driver put it succinctly by saying they would consider owning an environmentally friendly car *'if the price was right – it would be solely down to economics'* (#9), with another adding that a need for a larger

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practical vehicle meant that *‘I’d love to, but it’s hard for me to imagine currently being able to afford an environmentally friendly car that also meets with the practical requirements that I have of a vehicle’* (#3). The ICE-driver who regarded the notion of an environmentally friendly car as an oxymoron admitted that *‘if one existed, I’d love to have one’* adding that *‘I’m interested in electric cars and plug-in hybrids and such. I can see the benefits in terms of they slightly reduce carbon emissions and such other emissions from cars, but they’re just so goddamn expensive aren’t they, why would you want one?’* (#10) while another who said *‘I’d be perfectly happy with it’* suggested a price on an electric equivalent of their car, adding *‘say it was a couple of grand more expensive, but I’d realise the benefits of in terms of fuel, I’d do it but, at the moment, they’re far too expensive for me to be able to do that’* (#11), while purchase cost was also an (initial) issue for another ICE-driver who added *‘the second is range. Currently, the range isn’t sufficient for me to buy an electric car’* (#1).

The drawbacks of contemporary low carbon vehicle technology were also acknowledged by the ICE-driver who admitted that *‘I would embrace it’* and that *‘I know it has its limitations at the moment, it’s not the limitations of the engine, it’s the limitations of the power supply, and that will be solved and you will be driving vehicles that you wouldn’t know any difference’* (#4). Low carbon vehicle technology does move on and one ICE-driver noted that *‘I’d like to change our car for one that is at least hybrid’* adding that *‘if we move to hydrogen or whatever, if they make that viable, then I’d like something like that, something that was zero emission’* (#8) while another took a more laid-back approach, saying that while they would be *‘quite happy’* to have an environmentally friendly vehicle, and that *‘I would go with whatever is around at the time when I change my vehicle’* (#6).

There were contrasting views on owning and driving ‘green’ cars from the ICE-driver who said that *‘I would be very pleased to own and drive an environmentally friendly car’* adding *‘in fact I would be more pleased if I was part of a car club where I could just ... book a car when I needed it’* (#7) and another who added *‘I think that’d be absolutely fine if it still gave me the excitement of driving’* (#12). Less enthusiastic views were espoused by the ICE-driver who said of the idea of driving an environmentally friendly car that *‘it’s fine, it depends how you define it. I would say that this [their own car] is an environmentally friendly car on the basis that it’s old, it’s*

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reasonably efficient and it's fairly low mileage' (#5) and another who perhaps took a short term view, saying that they wouldn't find it *'as appealing as the car I currently have'* because *'I don't think there is a Mazda 3 that's considered to be environmentally friendly, and that's the car I currently choose to drive'* (#2).

It is clear then that, while all is not lost, there is some way to go insofar as connecting and informing the public with low carbon vehicles is concerned, with the contrasting observations of Coventry City Council and TfGM illustrating the importance of firsthand experience and engagement in this respect. These responses would suggest that members of the public can be receptive to the idea of low carbon vehicles, with ICE-drivers suggesting that issues such as peak oil, congestion and the environmental impacts of automobility need to be addressed. That said, caveats of cost, practicality and even image were also raised, and such pecuniary and practical caveats are legitimate concerns which could impact upon the uptake of low carbon vehicles, at least in the short term with contemporary EV and hybrid technology, although might a change in the image of EVs assuage such concerns until such technology matures?

5.5 Doing and being – the social and the cultural

Although the impetus, the technology (or technologies) – in both senses of the word – and the policies concomitant with low carbon vehicles are all crucial to low carbon vehicles and how their uptake is facilitated, the nature of the car as a cultural artefact (see 2.3) means that much rests on the way that they are perceived socio-culturally which, in turn, is dependent upon individual knowledges and *savoir* (e.g. Lyotard, 1984 – see 3.2 and 3.3). While this is especially true in a nascent EV market, this may also apply to the hybrid car market which, although perhaps established in its own right with Toyota reporting that they have sold 5 million hybrids worldwide (Toyota Europe, 2013), is still regarded as a minority technology compared to the conventional ICE, accounting for only 1.2% of UK car sales in 2012 (SMMT, 2013).

5.5.1 Mobility issues

When it comes to the prospect of 'doing' low carbon automobility, one concern often mentioned regarding electric vehicles is that of battery range. The question of how mobility issues, perhaps key to the essence of the car and one aspect of how we have

become conditioned so (see 2.3), might impact up on low carbon vehicle uptake prompted some very interesting observations.

POD Point's representative pointed out that mobility programmes such as electric taxis or shared vehicles would promote product visibility, very much in the mien initially proposed by TfGM in targeting low carbon vehicle initiatives at fleets rather than individual consumers, at least in the short term, in that while fleet drivers get little say in their vehicle but may come to appreciate it over time, the visibility provided by a fleet presence may ultimately invoke at least a curiosity among those possessed of more prosaic automotive inclinations. POD Point's representative also suggested that, longer-term, the use of EVs may be the only affordable means of transport. Although such a notion may seem speculative, restrictions upon the movement of conventional vehicles were mentioned by some of those interviewed, with Toyota's representative noting that such a restriction has existed for some time in the shape of the London Congestion Charge, while adding that low carbon vehicles won't necessarily reduce congestion. However, affording low carbon vehicles the chance to avoid the congestion endured by conventional vehicles in the face of potential movement restrictions, for example using bus lanes, as EVs are permitted to do in Norway (Berkeley, 2012) could impact upon their uptake, a point noted by Coventry City Council's representative who said *'if Coventry's ring road becomes completely unmanageable, but there's electric buses whizzing by you, or there's electric cars whizzing by you in special lanes, soon enough you take notice of that'* adding that, bereft of such measures as Coventry are, *'there's no specific benefit ... there's no real pressure to buy [a low carbon vehicle] for any other reason than doing good or making a statement'*.

One of the key concerns regarding mobility associated with electric vehicles is the notion of 'range anxiety', the fear that one won't reach one's destination without running out of battery charge or the means to recharge. Such fears pervade despite research (e.g. Technology Strategy Board, 2011) suggesting that daily mileage can average approximately 25 miles, with 99% of journeys being less than 40 miles long. It was with figures like these in mind that Tata's representative suggested that when it comes the restrictive nature of EV mobility that *'there's a large chunk of it that's perceived rather than actual'*, citing the oft quoted trip to Scotland that people actually

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seldom make, though is easier now thanks to the more recent provision of rapid chargers on trunk routes (Ecotricity, 2013).

Such relatively short distances mean that, for many people and in most circumstances and situations, a widely-quoted reliance on public charging points is potentially irrelevant and that home charging (where possible) could and should predominate as part of the autopoiesis of electro-mobility. Though theoretically convenient, this exchange highlighted perceived issues of home charging, in that many people lack dedicated charging sockets outside their homes and that:

RS_RMBC: *...they wouldn't think 'oh I'll just get one fitted to the outside of the house, an external socket', they'll just think 'oh well, that's not going to happen, is it?'*

CT_RMBC: *That's what ... in my mind, that's what I think ... like you said, you get home, you've got a home charging kit, then it means you've got to feed the wire out through the kitchen window, through the back, it's chucking it down, I've only got an extension lead, it's like, it's not waterproofed...*

Another perceived attitude to home charging echoed the one cited above, in that

BF_RMBC: *Like RS said, people would ... I'm not going to spend thirty grand on a car because I might have to spend another £150 to get someone to fit an external socket – but they would think like that wouldn't they?'*

RS_RMBC: *But they do think like that.*

BF_RMBC: *But as a proportion of the cost of buying an electric car...*

Indeed people do think like that. This attitude by prospective customers disdainful of paying approximately £800-1000 for a home-charging point was noted by the (then) head Renault ZE in the UK, striking him as a bizarre position to adopt having agreed to spending around £25,000 an electric car (see 5.3.4). To surmount this problem, it was suggested that *'if you're selling them, you say 'tell you what, you buy this car for thirty grand, and we'll come round and fit a socket on your front wall'...' (SK_RMBC)*, a notion which is now policy, whereby the government will fund 75% of the cost of

home charging points (OLEV, 2013c), with manufacturers meeting the other 25% on selected models (British Gas, 2013; Toyota UK, 2013).

An interesting take on the impact of mobility upon low carbon vehicles came from the representative of Nudge Advisory, who suggested that while low carbon vehicles may not increase mobility as such, *‘they do have the ability to maintain it’*, citing the potential for future *‘restrictions on conventional cars, and that would in turn reduce mobility’*, as mentioned above. (It is interesting to consider that if freedom is the essence of the car [see 2.3 and 3.4.1.2], this freedom could potentially be rent asunder by future environmental legislation whereas vehicles such as electric cars, even with all their perceived limitations, might actually – and counterintuitively – maintain the essence of the car.)

It was suggested by TfGM’s representative that mobility issues might even present *‘a massive opportunity to shift people out of conventional vehicles, out of cars’* and, for example, onto electric bicycles, as part of a more holistic transport solution meaning that *‘even Greater Manchester becomes less intimidating in terms of using that to travel around’* while also positing the idea of calling for taxi drivers to acquire low carbon vehicles as part of their licensing conditions in return for facilitating opportunities for additional ‘fares’. While a modal transport shift may be an interesting idea, Renault’s representative believed that *‘even if car ownership is starting to peak ... 80% of journeys are going to be made in cars’* and that *‘70-odd percent of journeys have one person sitting in the vehicle’*, scenarios which would lead to *‘probably smaller, energy efficient and quite probably electric cars get to be the type of vehicle people use’*, especially in urban settings, which no doubt was the rationale behind Renault’s Twizy model (e.g. figure 5.4). Whatever mode is pursued, low carbon vehicles of various technological persuasions are crucial to a wider system of low carbon mobility.

Another mobility issue pertains to the convenience of the car and notions of ownership in that, as a ‘disruptive technology’, a move to a low carbon automobility might challenge conventional notions of car ownership, as car sharing or car clubs will instead permit us to ‘own’ an ‘access to mobility’ rather than a vehicle of our own (see 2.6.4). However, one observation from the focus group discussions suggests that, whether out

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of status or convenience, many people will want their own personal mobility, and not merely access to mobility:

‘You’ll have all hired a car at some time, and there’s quite a nice feeling actually when you get in this car, there’s none of your normal own personal crap in it, which is your own, which you love, but it isn’t there and it’s like ‘ah, this is nice’, but when it comes to something like the idea of giving up having your own personal crap in your own personal car, people are reluctant. There’s a security, a comfort, it’s like having an extension of your front room, and people don’t ... people aren’t ready to let go of that in order to do something that, for society as a whole, and the world, makes much more sense’ (SK_RMBC).

This statement has implications for car sharing (see 2.6.4), and suggests a seemingly different nature to the car from other consumer goods or services (as also noted by Green (2010) – see 2.3), meaning that the idea and rationale of individual car ownership will prevail for some time yet.

5.5.2 Socio-cultural issues

As mentioned in the literature review, the car is more than simply a way of getting from one place to another. The car is a contemporaneous and culturally dynamic artefact and it was this in mind that the stakeholders were asked as to how they thought sociological or cultural issues might impact upon the uptake of low carbon vehicles.

There was a mixed reaction this notion, with Nudge Advisory’s representative saying that they weren’t *‘convinced it’s going to be the greatest impact’*, though admitted that *‘there will be pressures on people to be seen to be green’*, and noting that *‘we already see adverse comments on people driving large 4X4s’*. Conversely, Renault’s representative commented on how the Toyota Prius hybrid was adopted by American celebrities and fashionistas and how, on the back of that, the rationale for purchase was *‘as a fashion statement as much as an environmental statement for most people in the UK’*, and said that they thought that *‘a car is a very emotive purchase; it’s a statement, it says something about people’* (see 2.3, 3.2 and 3.4.2.4), adding that this notion that will resonate in the developing markets too – using Indonesia as an example, they noted that, echoing the rise of motoring in Britain (e.g. Thorold, 2003) *‘people had bicycles,*

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and they had scooters, and now they want cars’ and how, in China, people now ‘aspire to having a new car’.

Throughout its existence, the car has been regarded as aspirational, whether for the status (perceived or otherwise) it affords and for the freedom and mobility it brings. While notions of speed and style augment the car’s desirability, what of more environmental notions? Can a low carbon vehicle be the kind of car people aspire to? This exchange followed from one of the groups when asked if low carbon vehicles might become aspirational, in such a way that people will ‘want one’:

NB_RMBC: *All sorts of different vehicles are aspirational, depending on the person. One person might want a [Bugatti] Veyron, another one might want a really nice decked-out VW Camper, another one might want a Reliant Robin, you know, it’s ... people aspire to different things – there’s not many that will aspire to a Reliant Robin – but there are a little group of...*

SK_RMBC: *Thrillseekers who want to get scared at a lower speed...*

Q: *The electric car’s ideal for that.*

NB_RMBC: *...other people aspire to big executive saloons and things, it’s different things, so...*

BF_RMBC: *But it is interesting like the paradigm shift from horse to car is that the car was a figure of fun at the beginning, the man with the flag and everything, what a ridiculous way of getting around, no-one will ever want that, and then look what happened.*

CT_RMBC: *Well that’s what I’m saying, you know, I wish we could jump forward 100 years and find out what’s happened, the transition, it’s going to be fascinating, it’s a very interesting time I think to be alive over the next sort of 50 years or what have you, it’s going to be really interesting to see which way it goes. This is just ... it’s interesting to be here now as we were the sort of generation that saw, kind of like, the death knell of the petrol engine, of oil, and see how it comes on, you know?*

Toyota’s representative noted that among established values such as design and brand, environmental concern was increasingly a factor in purchase, a notion perhaps reflected in the share of hybrid sales at Toyota. However, there was some disquiet about how

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electric vehicles are perceived, with Tata's representative saying that *'it's very much the perception, it's the 'I'm driving around in a milk float' type thing'* and highlighting a need to educate people about the capabilities of electric cars which might benefit more from a word-of-mouth approach than an advertising campaign.

Despite advances made in EV technology and to the types of EV available, such as the Tesla Model S, the 'milk float' analogy still seems to perpetuate, as shown in this exchange from one of the focus groups:

RS_RMBC: *Well I think the milk float's done for the electric car in terms of making it cool. It's got a mountain to climb, to me, because people just associate electric cars, don't they [with] a lack of performance ... I mean, the electric motor is enormously powerful, better than the – if you could get batteries that were decent – better than your Audi S3.*

MF_RMBC: *Absolutely, yeah.*

RS_RMBC: *I think the problem is that people just think they're slow, they don't go very far, they run out of energy before you get to your destination, it's been a farce.*

This exchange was swiftly followed by another which perhaps alludes to a socio-cultural regard of the car, rather than perceived (im)practicalities:

MF_RMBC: *At the moment, all electric cars are cars which are small city cars which society deems being a bit crappy and, you know, not really exciting.*

SK_RMBC: *It's a strange thing today, the sort of theories we've got where you've got to have something that's more powerful and can go a long way, you've got to have something you can jump in and drive 3-400miles, 500 miles on a tank of fuel, and most people never drive it more than 50 miles at a stretch. So the reality is that people just aren't looking at cars for what they do, you know ... with the car, we've got to have a car that does everything that we possibly want a car to do, so it's got to be able to do 150mph, sip petrol now and again when it feels thirsty, and it's got to be able to carry a wardrobe, be small and nippy around country lanes; we want everything out of the one thing for some reason.*

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This observation resonates with that made by Nudge Advisory's representative regarding a perceived failure of EVs to replace all cars, and highlighting a need for better consumer education (see 5.2.2).

A way to counter any 'milk float' perceptions came from Coventry City Council's representative, who suggested that a move to hybridity by prestige marques such as Porsche (who produce hybrid versions of their Panamera and Cayenne models) or Land Rover could foment a cultural change, so that *'if you have an electric car, you're no longer the whacko milk float driver'*, while the representative from POD Point observed that people are more technologically aware and possess a fondness for gadgets which would appear to afford an opportunity to present electric cars as *'cool and different and technologically advanced'* compared to conventional ICEs.

The observation of SK_RMBC, above, suggests that motorists possess very demanding requirements of their cars, including some seldom or even never performed, and such demands are an example of how being conditioned to the car – a corollary of the 'lock-in' of the internal combustion engine – is manifest. The frustration expressed by Sir Clive Sinclair (see 2.3) regarding the installation of EV technology into conventional automotive architecture – another symptom of automotive conditioning? – was echoed by the participant who thought that

'at the moment, we're trying to make electric cars that are like combustion-engined cars, and the big step change will be when we realise, like SK says, that actually, we shouldn't try and replicate combustion technology into 100 years of development but with electric, we should say that the electric car will work differently but meet your needs better. And that's the step change that I don't think we're at yet, but I think that it can work. As long as electric tries to copy combustion, I think it's going to be a struggle' (BF_RMBC).

This observation echoes that of Top Gear's Richard Hammond, who noted in one of his Daily Mirror articles that "the trouble with grown up family electric cars like the Leaf is that people think they will be able to do things that their Focus or Astra can do" (Hammond, 2012e) and this suggests that the way society has become conditioned to the car (see 2.3, 2.6.4 and 3.4.2.3) may be the biggest socio-cultural hurdle to an uptake

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of low carbon vehicles. As another participant noted, *‘there is very much of a stigma still around electric vehicles, and we’ve not moved past that’* (AD_CCC), a quote which would suggest that, at the moment, the EV market is far from mainstream. So how might its acceptance be encouraged? Are we culturally ready for EVs?

Does a cultural disposition to EVs even matter? It may be that such readiness may be ultimately immaterial and that society will simply adapt to a low carbon automobility much as it does given any disruptive technology, although whether it will be with an embrace or a shrug remains to be seen; as one participant noted regarding any change *‘I think it’s inevitable. I think it’s going to come. It has to, kind of like, peak oil and stuff, what have you’* (CT_RMBC). This sense of inevitability was echoed elsewhere, in that *‘I suppose that at some time there’s going to be less petrol and diesel engines and there’s going to be a lot more electric cars, so people will naturally shift over to it over a period of time. I don’t think that any huge advertising campaign’s going to make that much difference until things are more readily available...’* (AC_CCC).

The view from TfGM was that *‘there’s a sense that people don’t understand why we have to do something’* and so while they pointed out the merits of their approach of informing of and providing alternatives to car use as *‘part of a mix, a transport mix’*, it was also felt that it would be beneficial to *‘dress up the low carbon vehicle in the things that people value about today’s vehicles’*, an observation perhaps pertinent this study. This thought resonated with Renault’s representative who, augmenting his statement above, suggested that people will have to want to buy low carbon vehicles. Echoing their observation about the nature of car purchase (see 5.3.4 and 5.5.1) and citing their then soon to be launched Zoe model, they pondered *‘will [people] buy a car because it’s clean and green? Some of them might. Will they buy a car because it’s good looking, it says something about them – whatever that means – and can afford? Yes they will’*. This response suggests that stakeholders might regard the semiotic nature of low carbon vehicles to be an important part of socio-cultural issues regarding their uptake (e.g. Heffner et al, 2007), and so something which low carbon vehicle policy may do well to note.

A perception in one of the focus groups was that convenience is paramount because *‘...if you think of most people who drive a car, they like ... they’ll say they like cars and*

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stuff, but generally they don't want to have to do anything to them', citing how comparatively labour-intensive it was to keep a car on the road twenty years ago, whereas now 'they just want a car they can just use, that makes them look good' (CT_RMBC).

However, when asked whether we are culturally ready for low carbon vehicles generally, downbeat view regarding cultural readiness was expressed by one of the focus groups:

AD_CCC: *We were...*

JW_CCC: *We were but then the money thing came into effect.*

AD_CCC: *It changed the world ... it has changed.*

JW_CCC: *It's definitely ... when I was first married 30 years ago, then you thought about the environment, environmentally friendly washing powders and nappies and stuff, and now that's not even a consideration on the horizon for me. It's value for money.*

Despite the sentiments expressed in this exchange, one of this group, when pressed further, suggested that *'...culturally, I know that we'll be fine. If all of a sudden tomorrow they said 'the petrol's run out, you'll have to go to electric' people wouldn't be going 'oh no, this is awful' as long as the car is normal...' (AD_CCC)*, an observation echoed by another participant who said that *'I think as long as people think that the electric car can do everything a combustion-engined car did, I think people would change. I would' (MF_RMBC).*

An interesting observation as to whether we might be ready for electric vehicles was made by one participant when they said:

'I've met people with electric cars and they will defend their electric car to the bitter end, because they love it and it's brilliant. I'm sure it is, and I'm sure if I had one, and was given one, it would be ace, but ... and I could defend it, but I still don't know why you'd have to defend it. I think that's where we ... once you stop having to defend it, then we're culturally ready I guess, I don't know, like diesels

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and petrol. Before, you'd have to defend yourself for having diesel, now you ... we're at that sort of level' (AD_CCC).

Is this true? Is this where 'here' is insofar as the electric car is concerned? If so, this questions the validity of any dissent of EV subsidies or opprobrium aimed at EVs thereon, as surely the current market reach of diesel ICE cars is predicated on government incentives regarding VED bands and, for the fleet car market, regarding VED bands and BiK for the fleet car market based upon to CO₂ emissions (to the detriment of attention to other emission externalities); that is, unless an automotive conditioning renders such meddling as acceptable with regard the ICE.

5.5.3 Signs and wonders – eco auto-semiotics

How might a low carbon vehicle manifest as an avatar? One of the EV-drivers felt that, from their experience of driving a Tata Indica EV, *'as far as [a] status symbol goes, the vehicle was more of a status symbol for people who are more environmentally conscious and treehuggers, and maybe less sexy to people interested in displays of wealth, things like that' (EV_#1)*, although how much that opinion refers to the Tata Indica *per se*, or to an EV in general, is open to debate.

In a return to the notion of car-as-representation, ICE-drivers were asked as to what they would think upon seeing someone driving an environmentally friendly car, so as to assess their semiotic value. Again, the response was predominately positive, with several using the phrase 'good on them' or variations thereon, such as the ICE-driver who said *'good on 'em if they can do it ... if you can afford to do it' (#9)* or *'I'd think fair play to them ... given the cost of the car, they're probably doing it from an environmental perspective rather than doing it to save cash like I am' (#10)*, although another noted that *'they're more trying to make a statement than change the world, I think at the moment. Fair enough, people ... early adopters and all the rest of it, but the technology and infrastructure isn't there yet'*, and adding *'I mean, good on 'em, it's good but ... they must have a lifestyle where they don't use a car ... where the limit of a car doesn't come into effect, sort of thing' (#12).*

Semiotics is not necessarily an issue according to the ICE-driver who said that *'I'd like to think that I wouldn't put a stigma attached to it'* and that *'I don't think that people*

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drive them for those reasons “oh look, I’m so environmentally friendly” ... I don’t know, maybe some people would, but ultimately I think people would respond to a Prius a lot more sensitively than they even realise, and I think that people would only really buy a Prius or any other environmentally friendly car if the fuel economy was a lot better than the alternative’ (#1).

‘Good on yer!’ was the instant response from the ICE-driver who admitted that their professional interests meant that they were ‘very keen that all vehicles should be as environmentally friendly as possible’ (#3), while other ICE-drivers said that they thought that drivers of environmentally friendly cars would ‘be environmentally aware and sort of be socially responsible’ (#7) and that ‘they’re being very sensible and, in truth, probably a bit cutting edge ... I admire them’ (#4). One ICE-driver said their reaction would be ‘positive ... generally positive, enthused and happy’ although they themselves still harboured ‘a slight sort of – at the moment – underlying reservation about them either from a range point of view or a cost point of view’ (#8) while curiosity might get the better of the ICE-driver who admitted that ‘I’d probably be really intrigued because normally no-one up close around me has got one. I mean, the only times I’ve ever seen it is like ... actors in America or somewhere, someone like Daryl Hannah or somebody had probably got one, but I’ve never seen one on the road’ (#11).

Less enthusiasm about the vehicles or the semiotics therein came from the ICE-driver who said they would think *‘not a huge amount’* about seeing others driving environmentally friendly cars, because *‘if I see a new one, I’d think they’re a lot of money for what they are and I do think ‘are they environmentally friendly’ on that basis, but ... I don’t make a judgement on the person particularly’* (#5) while two others admitted uncertainty because *‘they don’t look a lot different from a regular car, so you wouldn’t necessarily know’* (#6) others were driving an environmentally friendly car *‘unless it’s an electric one and then, at the moment, it’s generally got it splashed all over it for advertising purposes, but I don’t know if I’d necessarily think anything other than “it’s not going to be long before they’re going to have to charge that up”’* (#2).

But where might these ideas of the semiotics of environmentally friendly cars come from? It has been suggested that “we consume the product through the product itself,

but we consume its meaning by advertising” (Baudrillard, 1996:181), but is this necessarily so? The example of how the BMC Mini came to be viewed despite its prosaic intent was explored in the literature review (see 2.3) and, from the above exchanges, it seems that while car manufacturers may present their interpretation of what their car ‘means’ by advertising, whether we consume it in accordance with manufacturers wishes or we instead apply our own meanings is a moot point (see 2.3, 2.4 and 3.2); indeed, the focus group exchanges resulting from viewing the ICE advertisements (see 6.4.3.4) would suggest that the positions or views that manufacturers wish us to take from their advertisements can be regarded as less than credible. Does advertising for low carbon vehicles offer a similar incredulity?

As detailed in 4.2.3, part of the focus group discussion involved watching advertisements from car manufacturers’ YouTube channels, namely those of Nissan, Renault, BMW and Toyota, marques chosen because they all offer (or are about to offer) both conventional and low carbon vehicles.

It is notable that the responses to the advertisements for low carbon vehicles were better received than were those for the ICE vehicles (see 6.4.3.4). Fewer comments were made during the viewing of these advertisements than was the case with those for the ICE vehicles, although some of the comments made during the advertisements provided some revealing insights regarding EV knowledges and opinions, as this exchange following a seemingly short advertisement for the Nissan Leaf illustrates:

RS_RMBC: *You’d think they’d be able to afford a longer advert, given that the car’s about thirty grand.*

CT_RMBC: *Maybe the battery ran out on it [all laugh].*

BF_RMBC: *“Our adverts have a shorter range...”*

CT_RMBC: *Yeah, the range is really poor on it, you know?*

The groups weren’t fooled by the claim made in the Nissan Leaf advertisement that the Leaf was ‘the world’s bestselling 100% electric car’, with one participant noting ‘*that’s not that impressive a fact when you only sell 1,000 in the UK altogether and half of them are Nissans*’ (AD_CCC) and another observing that ‘*they’re not saying if they’ve sold two or two thousand or whatever*’ (NB_RMBC). Despite the apparent negativity

5. Low carbon vehicles – the here and now

of these comments, adjectives used to describe the Nissan Leaf as a result of the commercial included ‘positive’, ‘economical’, ‘futuristic’ and ‘friendly’. To complement these observations, it was striking that this 30-second long advert used the word ‘future’ five times to underline the energy type, domestic refuelling potential, driver interaction, costs and mobility concept of the Leaf.

Both groups identified an overarching ‘cleanliness’ of the low carbon vehicle advertisements, as opposed to any specific attribute of the cars themselves (in contrast to the ICE car advertisements), and highlighted how such a perception was achieved:

SK_RMBC: *If you look back when they’re showing us the vehicles themselves, the first one [Nissan Leaf] starts bright, yellow and shiny with the plug sockets and the lights in the windows. When they actually show you the car it’s against a really clear background, and at least three of those at some point show a car against a spotless clean background, and the colour of the car chosen is going to be a colour that looks clean and bright and airy and then you get your imagery of the sky and see birds and things, so it’s all about clean, clean, clean.*

BF_RMBC: *I got that from the BMW advert, that’s a very clean city image that they had.*

AD_CCC: *The Renault [ZE] one was all the smoke and very dirty in the first part and the very last bit was so clean. It was a white background with white cars with just black rims. It made you think ‘ooh, clean and tidy’ and then it drove off into this nice, leafy ... and it was a ... a clear message.*

The Renault advert juxtaposed the internal combustion-engined means of propulsion we have become perhaps conditioned to insofar as the car is concerned with the means of powering the electrical gadgets and appliances we use every day, with small internal combustion engines powering, for example, shavers, office computers, a (rip-cord-started) food mixer and vending machines, replete with very visible exhaust gases. These were contrasted with the clean, silent departure of an electrically powered Renault Zoe, making for a very clever and thought-provoking advertisement, to which participants applied adjectives such as ‘environmental’, ‘clean’, ‘convincing’ and ‘futuristic’.

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Mention was made about how the low carbon vehicle advertisements focussed more on the concept of low carbon automobility, whereas the ICE ones focussed more on the individual car being advertised (see 6.4.3.4). This ‘concept before car’ advertising strategy is surely appropriate in selling a disruptive technology to a society which has become conditioned to the ICE car, at least in the shorter term. The following exchange suggests that the former were also better received than the latter:

MF_RMBC: *I think the concept ads worked better [than the ICE vehicle advertisements] because they're only trying to get across one message really and that is 'this is a concept, electric cars, this is the future' whereas the other ones are ... they're selling a car and people buy cars on different things, you know, it's a lot more difficult to advertise them, every one.*

AM_RMBC: *From a car maker's perspective, I just view it as electric cars versus the brands of, like, petrol engines. Like, I can't differentiate between the different types of eco-cars that are just electric and just group them like that.*

NB_RMBC: *What Nissan try to do a little bit, but didn't in a great deal of detail, is say why you should buy this car above a petrol version, diesel version, that costs maybe less than half what this does.*

BF_RMBC: *Yes, the cost was a big factor in their advert. But I agree with MF, the concept ads were better than anything we've seen so far because it was that it was thought-provoking in the sense of imagine if all the technology we use now wasn't electric and had its own attached combustion engine.*

Further to the different styles or approaches between the advertisements for ICE vehicles and the advertisements for low carbon vehicles, one participant stated that ‘with the other adverts we saw for petrol cars, everyone knew what the cars were all about, knew how petrol cars work – they're introducing us to something new, aren't they? So it's drip feeding the concept’ (RS_RMBC).

This suggests that if we regard advertising as a source of cultural capital, then it is possible that a change in the way low carbon vehicles are promoted will necessarily prompt a change in the way they are consumed, if only for the fact that, by then, their ‘meaning’ may well have changed from niche and expensive to something rather more

prosaic and, indeed, an absence of an early gendering of electric cars (see 2.3 and 2.6.3) suggests that their meaning has already changed, from ‘clean and feminine’ to ‘clean and eco’ or ‘clean and futuristic’. For example, it was suggested that if or when the time comes that we are ‘culturally ready’ for electric vehicles, that the way in which they are promoted will necessarily change, in that *‘...advertises for electric cars in five or ten year’s time, assuming the technology doesn’t go off in another direction, will be very different. At the moment, the target market is not the person who wants to replace their Mondeo’* (BF_RMBC).

This may be so in a nascent EV market, and yet it is in ordinary motorists – and not just enthusiasts or early-adopters – accepting low carbon vehicles, whatever the technology, that the greatest automotive environmental amelioration can be achieved. But how amenable might motorists be to a transition towards low carbon automobility? Can we cross this automotive Rubicon?

5.6 EV or not EV?

The electric vehicle is perhaps the most immediately available alternatively-fuelled low carbon vehicle technology to the conventional ICE. Even allowing for its long gestation (see 2.6.3), the EV, because of its historical neglect, qualifies as a disruptive technology raising questions as to how receptive people might really be to them. As such it is pertinent to ask how will they fit into motorists’ lives, what response have stakeholders garnered from other stakeholders such as other businesses and local authorities, and what might this all mean for a wider low carbon automobility?

5.6.1 Ownership and use – questionnaire pointers

To begin, though, it is necessary to consider the extent to which an electric vehicle might practically fit into people’s lives and, to this end, it is pertinent to consider the use and ownership of the car, both on the road and domestically. The online questionnaire was designed both as a means of data collection and also a means of recruitment for further interview and focus group participation (see 4.3.1) and, insofar as the data collected is concerned, it is interesting to consider how such discrete, quantitative data might compare with deeper, more qualitative data collected with perhaps more reflection on behalf of participants.

One of the issues which tend to be raised by detractors of electric vehicles is the range permitted by current technology, whether by dint of battery capacity or recharging infrastructure and, while range anxiety is an issue (2.6.3), the CABLED EV trial found that such worries eased over the course of the 12 months. Nonetheless, the annual mileage travelled by returnees is of interest.

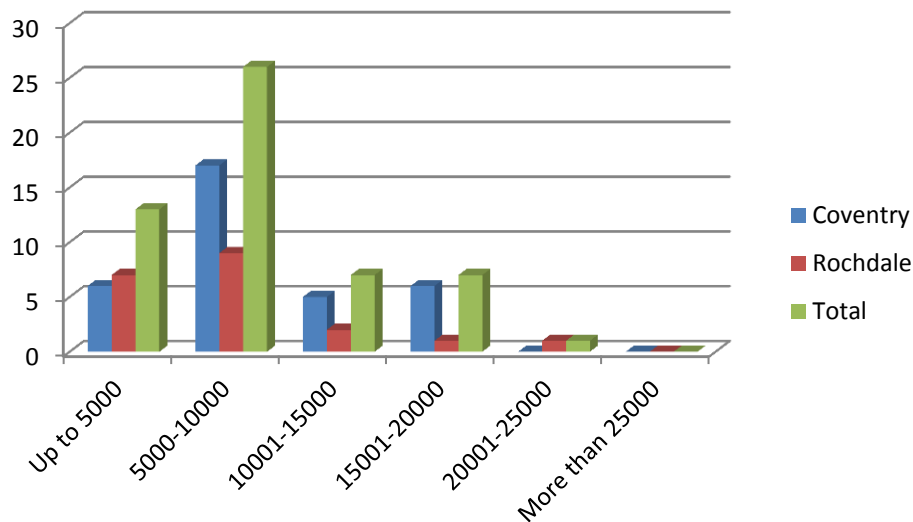


Figure 5.5 Typical annual mileage of questionnaire returnees

Of the 57 questionnaire returnees, 54 described themselves as car owners. Figure 5.5 shows that none of the car-owning questionnaire returnees typically exceeds 25,000 miles per year, with only one returnee actually exceeding 20,000 miles per year. 26 of all car-owning questionnaire returnees said that they drive between 5,000-10,000 miles per year, which would equate to a maximum of 27.4 miles every day. By way of comparison, the CABLED trial found that the average daily mileage during the trial was 21.4 miles (Cenex, 2013).

The questionnaire asked how often certain tasks/journeys were carried out during a typical month. The results (figure 5.6) show that commuting to work is the most common daily task carried out by returnees, while shopping trips are, on the whole, carried out more than once a week, as are trips in the pursuit of leisure activities. Conversely, trips of 50 miles or more, made for whatever reason, are undertaken on a less regular basis.

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These findings would suggest that an electric vehicle would fit most of the journeys/tasks undertaken by returnees in their cars. However, such a suggestion would be negated without somewhere to park a car so as to charge it for a period of time, for example overnight.

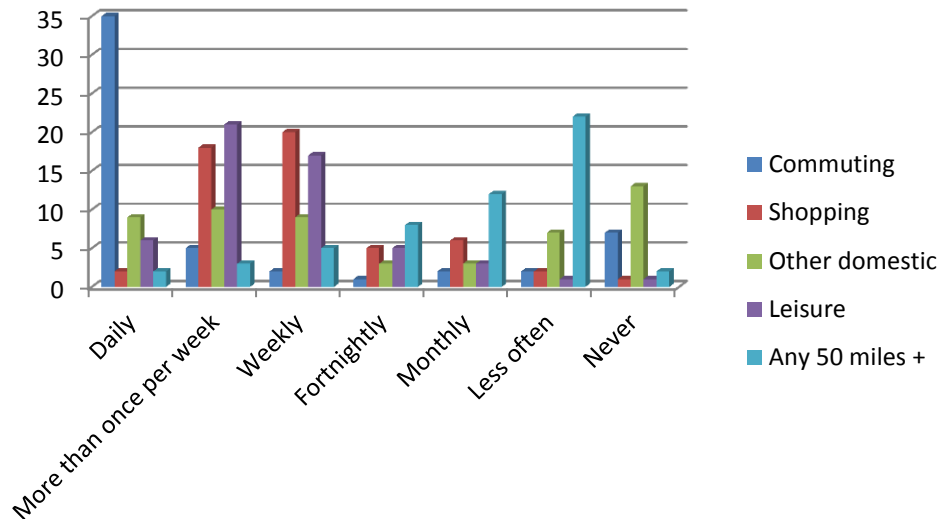


Figure 5.6 Frequency of tasks/journeys undertaken by questionnaire returnees in a typical month

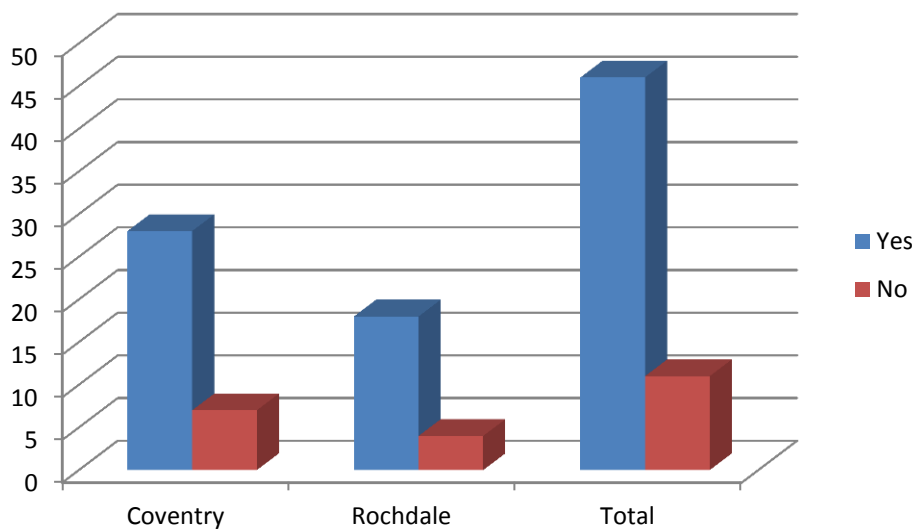


Figure 5.7 Questionnaire returnee household access to off-road parking

When asked about off-road parking, just over 80% of returnees overall said their household had access to off-road parking, a response rate which was consistent to both locales (figure 5.7).

The questionnaire also asked how many cars were in a household (figure 5.8). Overall, 30 of the 57 households had two cars, with 22 households having one car – in addition, four households possessed 3 cars and one household possessed 4 cars, meaning that 35 of the 57 returnee households possessed more than one car. Ownership distribution varied between the locales, in that while 60% of households in Coventry were two-car households, only 41% of those in Rochdale were. Conversely, only 31.4% of households in Coventry were one-car households, compared to 50% of those in Rochdale.

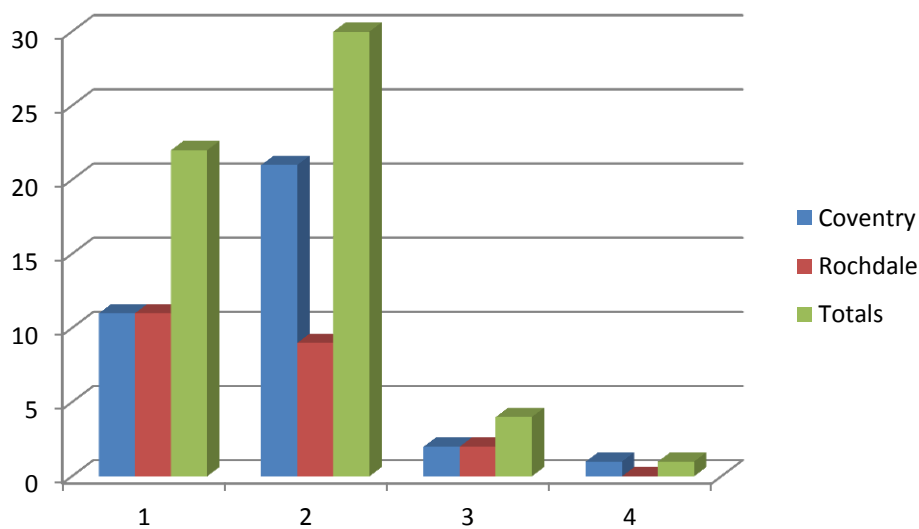


Figure 5.8 Number of cars in questionnaire returnee's households

These initial inquiries into the use and ownership of the car suggest that, on a practical basis at least, EVs would suit most people's car use and domestic situations. Most questionnaire returnees reported journey types and distances well within the limits of current EV battery technology, along with being a multi-car household with off-road parking, all scenarios seemingly ideal for EV adoption as this would permit overnight charging at home and, should a household's second car be electric (see 5.4.4), allow households the flexibility of an ICE vehicle for occasional longer trips.

Having considered potential practicality of EVs within the domestic situations of private motorists, the ICE-drivers' response to the idea of owning an electric vehicle is detailed in 6.6.2.

The stakeholders interviewed were perhaps necessarily engaged with the low carbon vehicle debate, but how did they perceive wider societal engagement?

5.6.2 An appetite for low carbon automobility?

Having considered the responses of businesses and local authorities, as well as considering public and media attitudes, a majority consensus among stakeholders was that people felt positive towards low carbon vehicles but were somehow reluctant to commit.

The view from Tata was that although people recognised the importance and the role of low carbon vehicles, this recognition was *‘tempered with a cautiousness about making the right commercial decisions’* and suggesting that how battery technology in small electronic devices like laptops had become smaller yet increasingly powerful over the last decade might act as a pointer to the potential for EV battery technology in the near future. Renault’s representative suggested that there was a *‘reservation and wait-and-see’* approach among prospective customers and that though *‘positively disposed to electric vehicles’* they seem to *‘want somebody else to take the lead’*.

The representative from TfGM noted that the appetite for low carbon vehicles was *‘lower than it ought to be’* and that although *‘people can see why it might be a good thing’*, a lack of experience may be tempering this realisation in that they *‘don’t yet know what it feels like to use a low carbon vehicle’*, which is where vehicle trials and EV roadshows (see 5.4.5.1) come in. However, timing is crucial with such events, and it was felt by Coventry City Council’s representative that there was a limited choice of vehicles at the start of the CABLED trial because *‘manufacturers didn’t bring their vehicles on in time’*, and that if the trial had been delayed to, say, around the time of the interview when there was a greater choice of dedicated electric vehicles such as the Nissan Leaf and Vauxhall Ampera, that *‘the whole vibe could have been bought up’* and perhaps built on further.

A perhaps more prosaic point of view was offered by Pod Point’s representative, in that more people *‘get it’* and they would be keen to commit to low carbon vehicles if it didn’t necessitate any extra outlay or, given that it does, if people could reconcile themselves to a multi-year ownership of the car to mitigate the higher extra outlay, and

pointing out that sales of hybrid cars upon their introduction were very much a ‘slow burn’ and that EV sales would no doubt burn similarly slowly – in fact, it seems early EV sales are ahead of early hybrid sales, in the US at least (Voelcker, 2013), although it should be noted that hybrids weren’t subsidised in the same way that EVs are at the moment.

Two who didn’t go along with this consensus – or, at least, didn’t mention it – were the representatives from Toyota and Nudge Advisory, with the former suggesting an appetite for low carbon vehicles in that environmental concern was a growing consideration among the car buying public and the latter noting a particular appetite for low carbon vehicles in London, with a wider appetite instilled ‘*by an artificial criteria – taxation*’ as opposed to exposing people to the real costs of low carbon vehicles.

5.7 Low carbon vehicle knowledges and opinions – where is here?

The opinions, knowledges and – later – experiences of motorists pertaining to low carbon vehicles are necessarily influenced by the actions of those facilitating a low carbon automobility such as car manufacturers, infrastructure providers and policy makers, as well as gatekeepers such the media, this chapter has documented where ‘here’ is regarding low carbon vehicle rationale, policy, technology and actions by canvassing stakeholder opinion thereon. In addition, the regard for, and knowledge of, low carbon vehicles in general by motorists has been explored. So where, in this respect, is ‘here’ and can the provision and administration of a low carbon automobility match any wider public aspirations?

One thing that is apparent is that, whether by dint of direction or communication, UK low carbon vehicle policy isn’t all it could be. From the observation by TfGM’s representative about there being perhaps more of an itinerant aspiration rather than a defined government policy (5.3.1) to the lack of standardisation in charging hardware (5.3.2) to the impending imposition of BiK tax onto EVs before their market has been truly established (5.3.4), the market-driven approach seemingly favoured by the UK Government all point to a government that perhaps isn’t really sure if they want to foster an uptake of EVs, or be responsible for it. However, governmental assurance is perhaps crucial in any nascent field if stakeholder investment is to be truly effective;

indeed, if it wasn't for EU directives, a move towards EV mobility may not be happening in the UK at all.

One thing that is interesting to note is that none of the stakeholders, when asked about the efficacy of low carbon vehicle policy initiatives, considered whether the policy message was reaching consumers, instead contemplating as to whether they were appropriate or sufficient. From the answers from the ICE-drivers, any such appropriateness or sufficiency is perhaps moot if the policy initiatives are failing reach consumers adequately. Indeed, Renault's representative noted how their ZE Tour highlighted how little people knew about electric cars, and it would seem that product knowledge isn't all that is lacking. That said, the fact that few of the ICE-drivers knew anything about the government's low carbon vehicle policy is perhaps unsurprising given the observations of the stakeholders, and the comment from ICE-driver #3 about OLEV providing various funds and hoping that things develop resonates with the 'itinerant aspiration' noted by TfGM's representative.

Indeed, it seems ICE-drivers' notions and knowledges of low carbon vehicles and policy were mixed to say the least, and yet if an overt knowledge of the product is lacking and is also not forthcoming from official or vested sources, then the danger is that the vocal body against the electric car will be ever more heard. It is notable that the episode of Top Gear which presented electric vehicles in a poor light was mentioned by representatives from Renault and Tata, as well as ICE-driver #6, who also highlighted the dangers of such high-profile analyses being offered to those who know little about EVs.

The sceptical approach of the media, towards EVs especially, was acknowledged by nearly all the stakeholders interviewed and, given how much money has been invested by OEMs – as noted by Nudge Advisory's representative – perhaps manufacturers should do more to let people approach and experience EVs. The electric car represents a new technology, not simply in terms of hardware but also in terms of its literal meaning as 'way-of-doing', and if we have become conditioned to the car in its current internal combustion engined-form, then the best way to provide an informed counter-analysis to that proffered by a sceptical media regarding such a new technology is by vehicle trials and the results therein, and also by firsthand experience of this new

technology and ‘way-of-doing’. This idea is seemingly borne out by the contrasting perceptions of public demand from the local authorities, which illustrates both the effect and the importance of experiencing low carbon vehicles, especially electric vehicles, if they are to be promoted effectively.

After all, interviews of some of the EV-drivers (see 6.6) suggests that those who’ve driven EVs like them and learn how they fit in their lives, notions endorsed by the representatives of Coventry City Council and Nudge Advisory, and if people are indeed as amenable to the idea of low carbon vehicles as the ICE-drivers’ replies suggest (5.4.5.1), then surely it would be advantageous to allow them to confirm their amenability by experience, especially regarding a new ‘way-of-doing’ or way of performing personal mobility that is – for the moment at least – initially more expensive and seemingly less convenient.

That said, even if interested bodies abandon a previous ‘build-it-and-they-will-come’ approach, it was acknowledged by stakeholders that purchase price remains a barrier, even if the whole life costs can be less than that of conventional cars (see McMorris *et al*, 2012); indeed, the high cost of buying an electric car was cited as a barrier by several of the ICE-drivers. However, new technologies are always expensive – and, in terms of user experience, sometimes relatively cumbersome – at first, and prices should reach at least a parity with conventional cars, as Renault are aiming for now with their battery lease model, as the uptake and further development of the technology advances. The potential for price parity again highlights the importance of reaching out to, and communicating with, the public. Nonetheless, it seems that there is a need to promote a whole cost of ownership to consumers, especially in the face of the prohibitive purchase price of electric vehicles at the moment which may predicate longer ownership cycles to make the sums add up; of course, the ownership-cycle/cost equation will balance out as prices for electric cars come down.

Overall then, there appears to be an amenability towards low carbon vehicles from motorists and a (policy-led) aspiration from stakeholders to provide them. However, policy is far from coherent or communicated, and the voices of those critical of low carbon vehicles – and of EVs in particular – appear to be loudest, at least at the

moment. Those promoting EVs need to promote their virtues more effectively and to make their voices heard.

However, as noted in the literature review, there is more to the motor car than the mere convenience and utility which the EV is perceived to lack. The way that the car is ‘consumed’ – that is, regarded as icon, status symbol, cultural artefact and experience – can transcend utility and can either be regarded as a lever to the uptake of EVs or perhaps even act as a bigger barrier to this endeavour.

But how is the contemporary consumption of the car manifest? This is detailed in the next chapter.

6. Automotive for the People

6.1 Introduction

The purpose of ‘automotive for the people’ is twofold. In one respect, it is documentary in that it details where ‘here’ (see 2.1) is with consideration to socio-cultural regard for the car; that is the rationale and representation of car choice. In another respect, it pertains to the more theoretical aspect of this study in that it considers where ‘here’ is with regard to the affectual, representational and non-representational aspects of contemporary automotive mores and experiences of ordinary motorists (see figure 3.1, reiterated as figure 6.2), and how such mores and experiences might be transferred to low carbon vehicles by considering how such vehicles are consumed now and may be consumed in the future.

The final definition of ‘here’ detailed in 2.1 concerned the contemporary consumption of the car, that is how we view, regard and experience the car today, both socially or culturally. This warrants several strands of investigation, and so this analysis will consider:

- Rationale for current car choice and any automotive aspirations
- The sources and manifestations of the semiotic and representational aspects of the car, which perhaps constitutes a default consumption of the car
- The feelings and experiences invoked by ICE-drivers’ cars.

In addition, how these feelings, experiences and representations may impact upon a low carbon vehicle uptake is also key to this study and, as such, it is pertinent to consider another strand of investigation:

- ICE-driver perceptions of electric vehicles and how this compares with the feelings and experiences of those who have driven them.

Figure 6.1 is a schematic diagram illustrating how Thrift’s four translations of affect (Thrift, 2004: 60-64 – see 3.4.1) and his seven tenets of non-representational theory (Thrift, 2008: 1-14 – see 3.4.2) pertain to the sections that comprise this chapter.

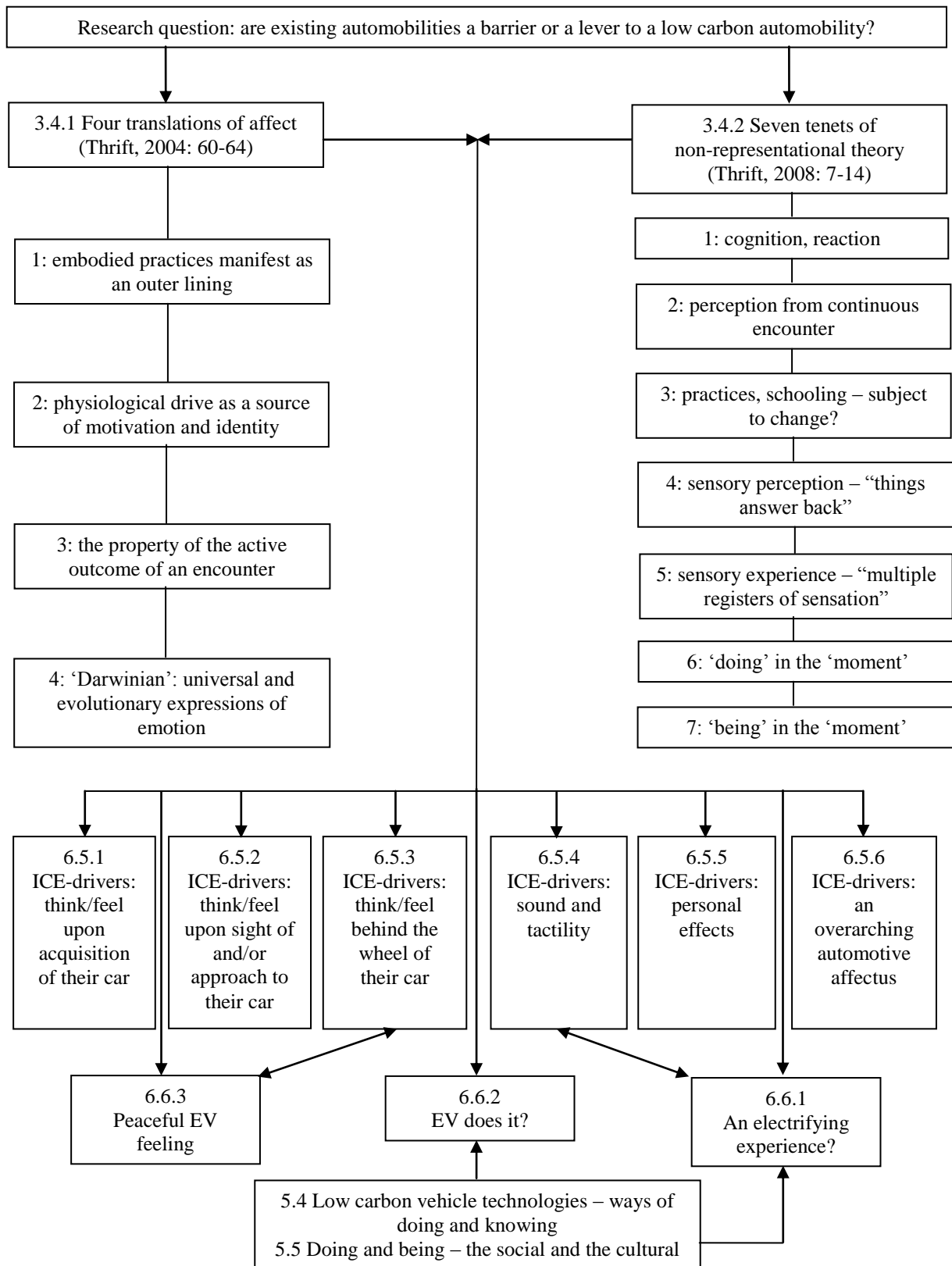


Figure 6.1 Automotive for the People ‘affectual’ analysis framework

6. Automotive for the people

When choosing a car, our choice is subject to several, mostly prosaic, influences such as purchase and running costs, day-to-day practicality and reliability. Such quotidian compromises mean that many seldom get to drive, or choose to drive, a car that may ‘suit’ better; a ‘dream car’, if indeed there is one. The ‘rationale, likes and dislikes’ section assesses the rationale behind car choice and considers everyday automotive practices based on opinions expressed by ordinary motorists on the online questionnaire and in face-to-face interviews.

From the outset, the questionnaire sample, which consisted of an almost even gender participation, with the majority of ICE-drivers aged between 35 and 54 years old (see 4.2.1), provided a wider opinion of the car. An interesting finding from the questionnaire data was that the car wasn’t regarded so much as a luxury, rather as a necessity, a finding that is seemingly underlined by the denial of the car as a status symbol, avatar or cultural artefact and agreement that the car is simply a tool by which to travel from one place to another.

Findings from the interviews, however, paint a different picture, in that notions of brand, status and cultural identity did have a place in the regard or ‘consumption’ of the car (6.4), with even an affinity for prestige and performance cars being aspired to (see 6.3.2.5). If we are to understand where such preferences or aspirations come from, we need to look beyond the mere utility of the car which they seemingly supplant.

The conceptual framework of this study depicted in figure 3.1 (and reiterated here as figure 6.2) was designed to explore beyond the instrumentality of the automobile suggested from the questionnaires, and to assess not only such notions of representationality and identity, but also more ephemeral, affective aspects to automobility and, in so doing, collectively posit a quotidian consumption of the car and consider if – and how – such an automotive consumption may act as a barrier or a lever to a future low carbon automobility. The efficacy of this postmodern, affectual and non-representational conceptualisation is discussed in chapter 7 (see figure 7.1).

Though perhaps a postmodern *et ergo* passé way of appraising car consumption, the notion of car-as-representation still has some currency, regarded as it is as ‘the

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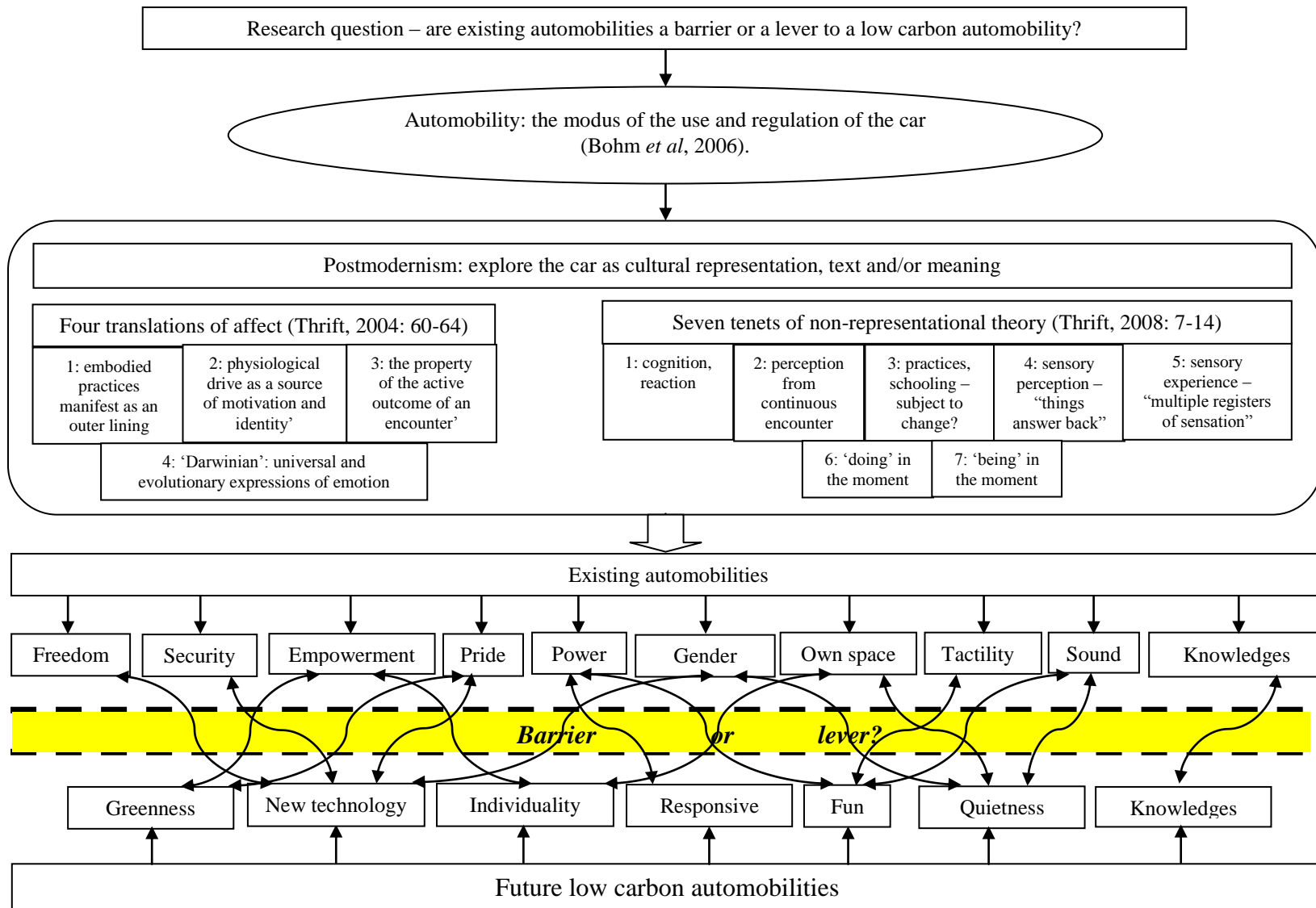


Figure 6.2 ‘How do we go from here...?’ conceptual framework (see also figure 3.1)

ultimate apparel' (Nieuwenhuis, 2008) and is perhaps the default way in which the consumption of the car is manifest. We all make judgements about other people based not only upon the car they drive, but also how they drive it, and it is pertinent to consider what cars may say about us, both generally and specifically, as part of a cultural consumption of the car. As we shall see, how the car is consumed is not only individual to each one of us, but can differ greatly from how manufacturers would like us to regard their products. The car as avatar is a default means of addressing the sociology of the car, and it is interesting to consider what drivers say about their cars, whether owners as avatars for their cars as much as cars might act as avatars for their owners.

It is perhaps surprising that what prevents a postmodern car-as-representation view from being necessarily passé is the way that such representation pertains to Thrift's fourth tenet of non-representational theory in that 'things answer back' (3.4.2.4). While the sound and tactility of cars may 'answer back' as they are piloted, it is the representation of other cars that primarily, but equally, speaks to us about other people's cars. But how can the notion of the car-as-representation be non-representational – this is surely incongruous and/or contradictory?

It was noted in 2.3 that we may not necessarily agree with car manufacturers as to what their cars are, say or mean, and so it is from other drivers and their cars. Instead, what a car is, says or means must come from ourselves, our own personal, individual interpretation of the representation or automotive text and from how that representation or text is presented; that is, how we present our representations (McCormack, 2003 – see 2.3), with the representation or text in front of us – and of other drivers and pedestrians – is a corollary of the first and second of Thrift's definitions of affect (3.4.1.1 and 3.4.1.2).

Therefore, because the nature – the essence, even – of the car will change as a corollary of the technologies employed with a move to low carbon automobility, it is pertinent to look deeper than that, to consider how we *present* our representations and try to see how (or if) the way the car is consumed will be a barrier to low carbon vehicles.

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The quote from Samuels (2002) which headed the introduction to this study goes some way to illustrate the difficulties in ascertaining how people subconsciously ‘feel’ the car just from interview, as it necessitates asking people to consider what they don’t ordinarily think about, despite practising their automobilities perhaps on a daily basis – that is, the mundane intimacy to which Samuels refers; a banal automotive intimacy. Indeed, asking people to ‘think’ about feeling automobility can even contradict the non-cognitive nature of affect, but enquiring as to such automotive expressions may be close as we get, for the purposes of this study, and can assist in constructing and understanding an automotive affectus, albeit by proxy. Nonetheless, to assist in this endeavour, interviews were conducted in ICE-drivers’ cars when possible, so as to better elicit responses; the efficacy of this approach will be discussed later.

In attempting to construct an ‘affect-by-proxy’ while ascertaining the non-representationality of the car and of automobilities, how ICE-drivers’ felt upon acquiring their car, upon seeing or approaching their car, and behind the wheel of their car, was considered. The more tactile and aural aspects of ICE-drivers’ cars was also investigated, along with any personalisation, to assess how individual automobility is experienced and signified. All of these factors are potentially summarised, or even complemented, by an overall affectus.

Additionally, ICE-drivers were asked as to how low carbon vehicles, especially EVs, were perceived to feel like. In this respect, the opinions of those who have driven electric cars are also pertinent as their reporting of the experiences and sensations provided by EVs can provide a comparison not only of the quotidian experiences and sensations reported by ICE-drivers of/to their own cars to assess if such automotive mores the car represents a kind of automotive Rubicon, but also of ICE-drivers’ perceptions to EVs so as to see if perceptions of EVs match the reality.

With non-representationality being a tacit and intuitive response to affect (Pile, 2010), and while such affect exists in flows, in the milieu (see 3.4.1), is possible to consider the reactions of ICE-drivers to their own cars and the EV-drivers to their CABLED trial vehicles with reference to the seven tenets of non-representational theory (Thrift, 2004) and the four translations of affect (Thrift, 2008) noted in sections 3.4.2 and 3.4.1 respectively.

From this analysis, it seems that widely expressed reports of initial of excitement and novelty upon acquisition of ICE-drivers' cars can manifest themselves in a myriad of feelings over time, ranging from pleasure and privilege to a utilitarian reassurance to feeling nothing at all. Feelings behind the wheel were also varied, including empowerment, familiarity, isolation, stress and even boredom. Overarching affects of 'joy' (Spinoza 1996 [1677]: 77) were broadly, but not exclusively, invoked by the convenience and utility afforded by the motor car in general, rather than by something intrinsic of ICE-drivers' own cars.

With respect to electric vehicles, perceptions were broadly matched by the experience of the EV-drivers. ICE-drivers' notions of smoothness and quietness were reported by the EV-drivers, as were concerns over range anxiety, although it seems that these can concerns diminish with experience. The feelings invoked by the electric cars were necessarily different to those invoked by conventional ICE cars and were reported in a positive light.

The responses detailed throughout the chapter shine a light on some of the quotidian practices and experiences not only of contemporary automobility, but also of a potential future low carbon automobility, and how these practices and experiences are manifest in the milieu of encounter and tactility.

6.2 Driving forces or rationale roulette?

Key to this study is how motorists regard the car or automobile, how they consume it – that is, whether they see the car as an object (or *objet*), an avatar, an experience, or just a tool. However, analysis of questionnaire data appears to highlight the innate shortcomings of questionnaires themselves (see also 4.3.1), certainly insofar as a disconnect as to how cars are regarded and experienced.

6.2.1 Questionnaire data – the car as...

As a step to ascertain this, the questionnaire enquired as to how the car was regarded. This was done by completing the statement 'I see the car as ...' and rating six views of the car or automobile on a Likert scale of responses, these being '*strongly agree*',

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'agree', 'neither agree nor disagree', 'disagree', and 'strongly disagree'. Figures 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 illustrate the opinions of returnees.

Figure 6.3 indicates that 14 of the 57 returnees saw the car as a luxury, with 29 returnees either disagreeing or strongly disagreeing with the notion of the car as a luxury. 14 returnees neither agreed nor disagreed that the car was a luxury. That just over half of questionnaire returnees disagreed with the notion of the car as a luxury would suggest that they would regard the car instead as a necessity.

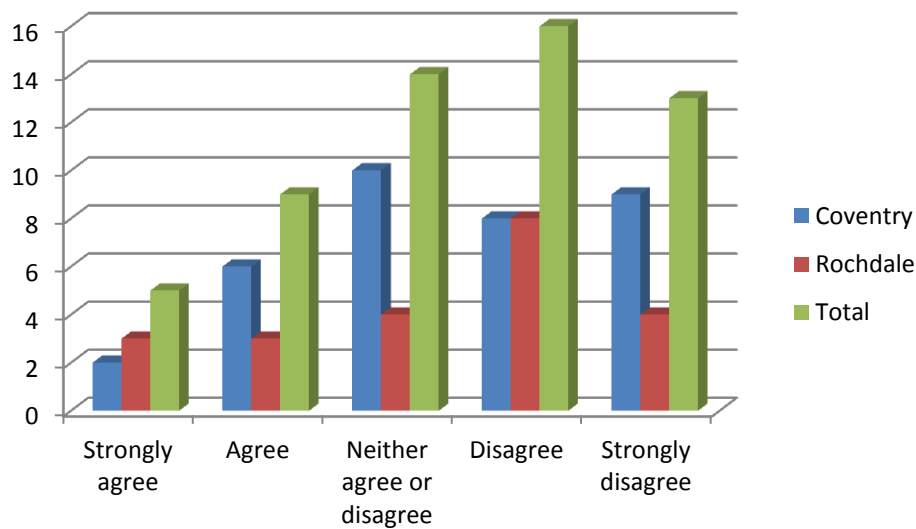


Figure 6.3 Responses to the statement 'I see the car as ... a luxury'

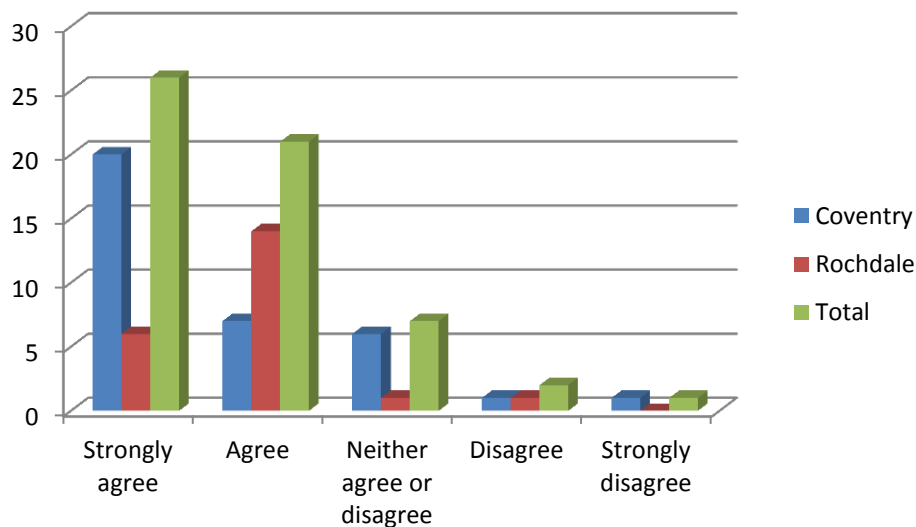


Figure 6.4 Responses to the statement 'I see the car as ... a necessity'

If fact, response to the notion of the car as necessity (figure 6.4) was very strong, with 47 of the 57 returnees agreeing or strongly agreeing that the car was a necessity, whereas only 3 returnees didn't regard it so. 7 returnees neither agreed nor disagreed that the car was a necessity.

The responses indicated in figures 6.3 and 6.4 would suggest that notions of luxury and necessity are discerned by degree, with a more powerful consensus being that a car is a great necessity. But how and why is this necessity borne? Is it as a result of cultural concerns or of something more prosaic?

Figure 6.5 shows that 39 of the 57 returnees disagree or strongly disagree with the notion of the car as status symbol, with only 5 returnees agreeing or strongly agreeing that it was. 13 returnees neither agreed nor disagreed that the car was a status symbol.

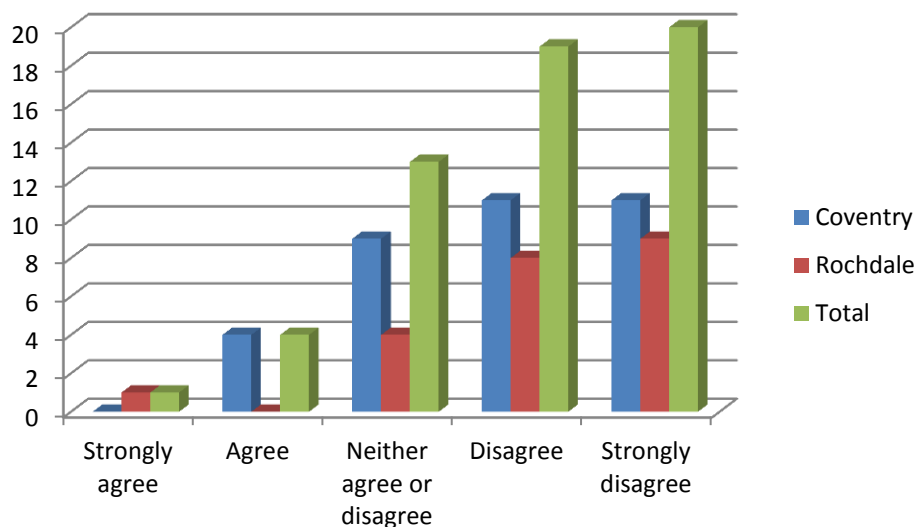


Figure 6.5 Responses to the statement 'I see the car as ... a status symbol'

If the car isn't seemingly regarded as a sign of status, can it be regarded as a sign of something else? Figure 6.6 shows little agreement regarding the semiotic nature of the car among returnees, with 39 of them disagreeing or strongly disagreeing with the idea of the car as a sign of identity. In contrast, only 6 returnees agreed with this idea. 12 returnees neither agreed nor disagreed that the car was a sign of identity.

6. Automotive for the people

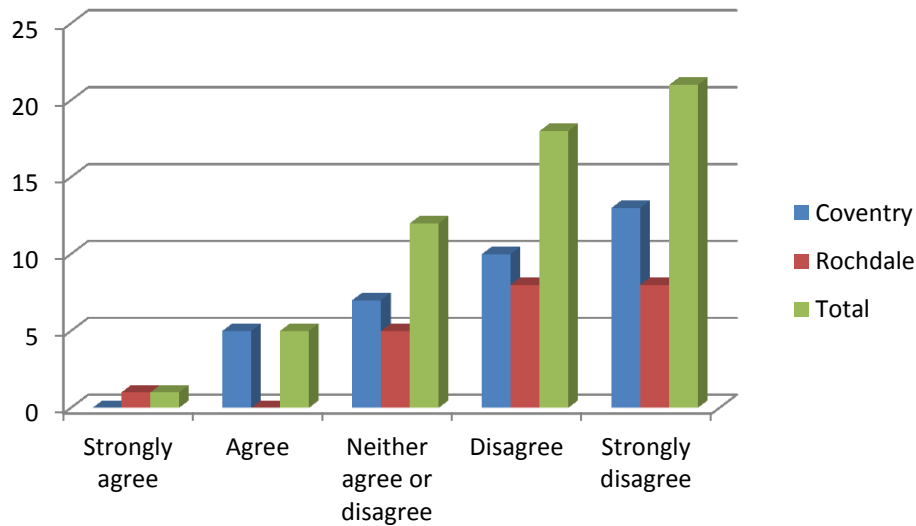


Figure 6.6 Responses to the statement 'I see the car as ... a sign of identity'

Figure 6.7 shows that only 6 of the 57 returnees agreed or strongly agreed with the idea of the car as a cultural object, a notion which was qualified on the online questionnaire as pertaining to films, TV, literature or society. Conversely, 36 returnees did not regard the car in this way. 12 returnees neither agreed nor disagreed that the car was a cultural object.

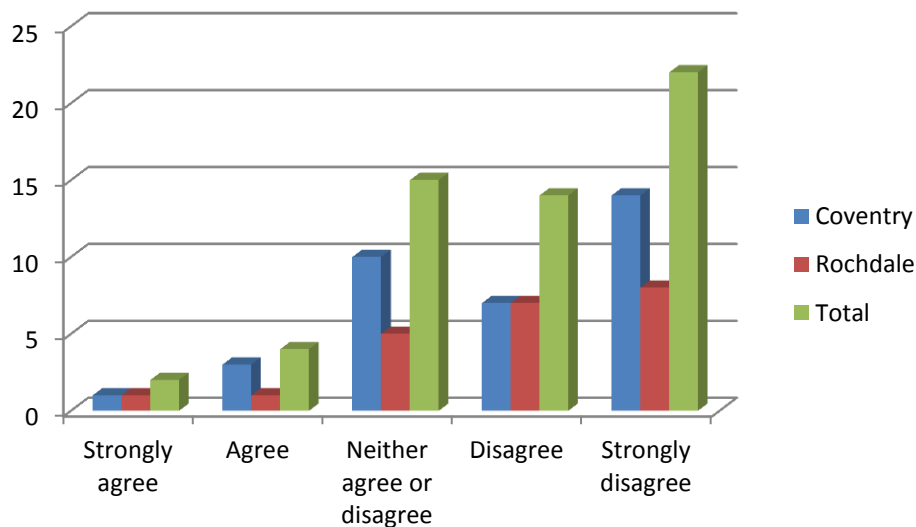


Figure 6.7 Responses to the statement 'I see the car as ... a cultural object'

Figure 6.8 reflects the utility with which the car is seemingly regarded among returnees, with 44 of them agreeing or strongly agreeing with the idea of the car as purely a way

to get from A to B, with 7 disagreeing or strongly disagreeing with this notion. 6 returnees neither agreed nor disagreed with the notion that the car was purely a way to get from A to B.

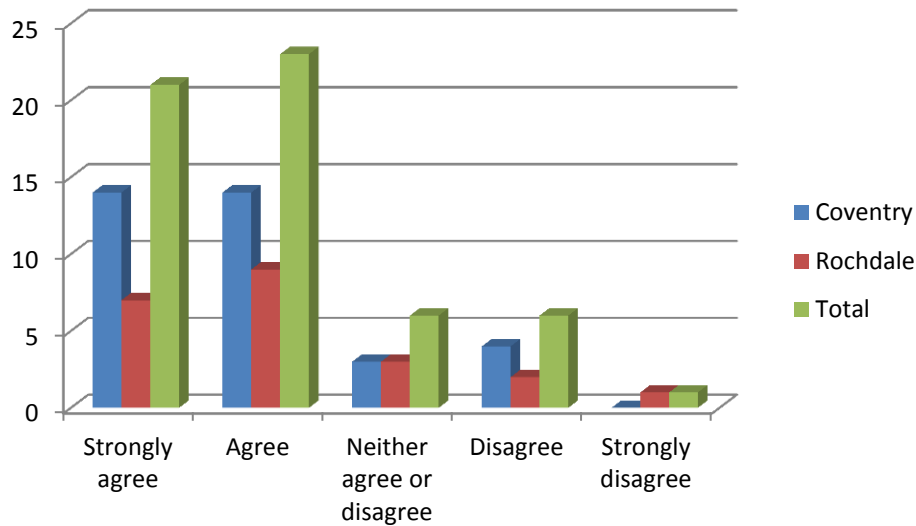


Figure 6.8 Responses to the statement ‘I see the car as ... purely a way to get from A to B’

6.2.2 The car as... summary

From these six statements alone, the results of how questionnaire returnees view the car would seem to indicate that there is little to the car beyond its utility, with returnees placing an emphasis upon its necessity and upon its place as a means of transport, and predominately dismissing notions of luxury, status, culture and identity bound up with the car. It seems the car, on this evidence, is just a tool to many.

The premise of this study is that the socio-cultural consumption of the car may predicate how motorists adapt to a low carbon automobility, and yet the results of these six statements appear to contradict this, and also the notion of the car as “aesthetic, emotional and sensory” (Sheller, 2004: 222) and belie Chris Bangle’s difference between an automobile and a car (TED, 2007 – see 2.3), between a vehicle which simply moves us physically and a vehicle which can also move us in other ways.

Such a rational, logical view of the car would suggest that the change to a low carbon automobility would be a simple one as, over time, contemporary automobiles are

exchanged for low carbon automobiles. However, the literature (e.g. Ivory & Genus, 2010; Edensor, 2004; Sheller, 2004; Setright, 2003; Sachs, 1992 – see 2.3) suggests that there is indeed a cultural component to the car, in turn suggesting that the returnee reaction to the six statements above appears to defy the literature.

In light of the literature, then, the questionnaire findings would suggest that there is a disconnect of some kind in the relationship between ICE-drivers and their cars, a relationship which will necessarily change as we move to a low carbon automobility, and, from figure 3.1, may constitute a barrier to low carbon automobility.

By their very natures, affect is non-cognitive while non-representational theory is pre-cognitive (see 3.4.1 and 3.4.2 respectively) and their invocation as a framework to better assess the consumption of the car means that all motorists, whether or not they are car enthusiasts and whether or not they even realise it, have something to ‘say’ regarding the consumption of the car. This is why, far from debasing the premise of this study, the response of the questionnaire returnees would suggest that the notions of affect and non-representational theory are crucial in effecting a deeper, more holistic consumption of the car.

Indeed, insofar as the questionnaire data is concerned, it is interesting to consider how such discrete, quantitative information might compare with deeper, more qualitative responses collated with perhaps more reflection on behalf of the ICE-drivers.

6.3 Automotive priorities

There are many aspects to car ownership, some more important than others. Questions regarding notions of style and branding, compared to more mundane practicalities have implications as to whether the car is indeed an object of desire or a mere tool.

6.3.1 Questionnaire data – utility vroom

Questionnaire returnees were asked to rate selected facets of car qualities on a 5-point Likert scale from ‘not important’ to ‘very important’. Figure 6.9 illustrates the number of returnees who rated certain qualities ‘important’ or ‘very important’ when buying a car.

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From the questionnaire data, it appears that returnees value the more prosaic aspects of car ownership – cost, fuel economy, safety and reliability – most highly, with style and image coming quite low down on returnees’ list of priorities. Official CO₂/km emissions figures were regarded as important or very important by 31 of the 57 returnees with, though not shown on the graph, only 10 returnees saying that these emission figures were not very important or not important to them when choosing a car.

In providing an opportunity for returnees to express their automotive priorities, these results underline the observations made in 6.2, and the fact that issues such as brand, style and image were valued less highly by questionnaire returnees is interesting, as not only does it again contradict the literature (see 2.3), but it would also appear to confound the wisdom of marketing and the images of freedom and status they engender.

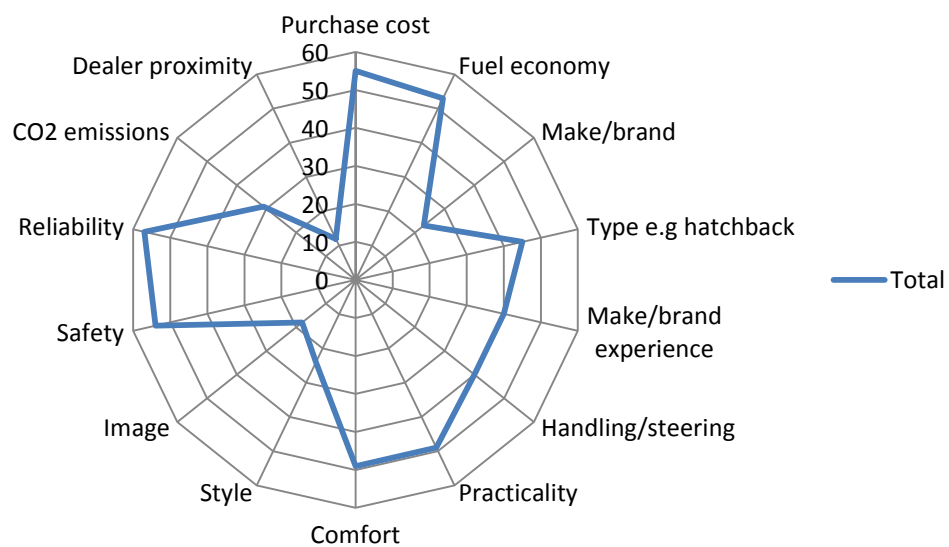


Figure 6.9 Factors rated ‘important’ or ‘very important’ when buying a new car

Is this really the case? Is the motor car simply a tool or an appliance, or might this point to the need to consider the affectual and non-representational when considering the consumption of the car? Again, to ascertain automotive priorities, it is necessary to compare the responses of questionnaire returnees depicted above with those of ICE-drivers.

6.3.2 Real world rationales

As to why ICE-drivers chose the car they did formed the basis of the opening question of the interview. Were cars really chosen for prosaic reasons, or was there something more to the decision?

Some of the ICE-drivers suggested that their car was almost a default purchase in that it was purchased cheaply from a family member – *‘it was just about the time I was getting my first car’* (#1), *‘I don’t suppose I did choose it. It was my in-laws car, they had a new car, so it got passed down’* (#7) – or that it was chosen on their behalf by another member of the family who, working for the car’s manufacturer, *‘could get finance ... it wouldn’t be a car that I would personally go out and buy, but I like it’* (#9).

While the cost of a car may be an overriding and even obvious motive for car choice, price was cited as the primary reason by only two ICE-drivers, one of whom noted that *‘at the time, I was looking for something reasonably inexpensive, reasonably cheap to run’* (#5), while another stated that while *‘price, I would say, is the number one for me’* (#10), also noting running costs, and mentioned environmental considerations too, for example *‘most of it was made with recyclable materials’*. A need for at least a degree of space was cited by ICE-drivers with perhaps the largest vehicles – *‘I have a large family’* (#3), *‘I’ve got a family ... we do a lot of camping’* (#6), *‘size, basically for ... we just wanted something spacious’* (#8) – and also the smallest vehicle, in that *‘I did look at the Smart car, but I needed back seats’* (#10).

Less rational responses for choice of car cited the aesthetics of the styling – *‘I liked the shape’* (#2) – the performance, in that *‘I wanted something with quite a bit of performance, but with practicality as well’* (#12), and the tactility – *‘I like to have a car that’s fun to drive, rather than one that drives itself’* (#4) – afforded by their respective cars. One ICE-driver stated that they had no input into the car they drove, sharing it as they did with parents, but admitted that they had chosen their previous car (a Vauxhall Corsa) on the grounds of parental advice, in that *‘it was on reputation, and through the advice of my dad, who’s kind of savvy with car mechanics’* (#11).

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Most of the ICE-drivers had bought their cars second-hand, with a minority having bought their cars new (#8, #10 and #11) or ‘nearly new’ (#12).

From these responses, it seems that the ICE-drivers’ current choice of car were mainly of a rational nature, with cost and practicality foremost, while a minority resulted from looking beyond everyday utility; for some, their choice of car was circumstantial. So as to enquire further about the rationale for car choice, ICE-drivers were asked to elaborate as to what considerations impacted upon their choice of car, with the four umbrella consideration terms being practicality, cost, environmental and cultural considerations. These aspects were chosen to ascertain just how much utilitarian automotive concerns influenced car choice and so see if two key interests of this study – environmental impact (see 2.5) and the socio-cultural impact of the car (2.3 and 2.4) – might also play a perhaps less considered, but nonetheless important, role in ICE-drivers’ car choice.

6.3.2.1 Car considerations – practicality

The vast majority of ICE-drivers said that practical considerations impacted upon their choice of car, with only one saying that practicalities didn’t have any bearing on their choice, and admitting that their two-seater sports car was ‘*totally impractical on many bases*’ but that this impracticality was ‘*compensated*’ by their family also owning a more practical vehicle (#4).

Reliability was a given as a practical concern, with two ICE-drivers noting a brand-related dependability, with one citing their ‘*possibly being a bit conscious of it being a VW group car, so a bit more reliable than, say, a French or Italian alternative*’ (#5) and another noting that ‘*I had heard that this sort of era Polo was quite reliable*’ (#1). Size and accommodation was also noted as a practical need, with one saying that their choice was based upon ‘*the amount of stuff and people, and sometimes both, that I need to move*’ (#3) and another noting that ‘*I was accommodating a growing family, and that ... on a fairly regular basis we’ll carry a large quantity of things in the car*’ (#6).

Accommodating their family was a factor for one ICE-driver, in that despite their car being a default acquisition, they would want a car that ‘*could fit the size of the family in*’ (#7), while another pondered about ‘*functionality – would that be the right word?*’

Definitely function over form anyway...’ (#8). The number of doors was cited as a practical concern, either because *‘I wanted five doors because I take a lot of friends out’* (#12) or simply because *‘I always want a four-door car; I’d never have a three-door car’* (#2).

In addition to sentiments summarised in 6.2.2, purchase and running costs were also cited as a practicality by three ICE-drivers, one who cited *‘the factors of insurance and fuel economy’* (#9), and another who said that *‘I wouldn’t have bought a [Citroën] C1 if I had unlimited money, so I suppose the amount of money I had was probably the main practical concern ... it’s a cheap car, cheap to run’* (#10) while another considered cost *‘in terms of the tax band’*, while also admitting that they *‘always kind of went on reputation of what I perceived to be a good car’* on the basis of familial advice (#11).

6.3.2.2 Car considerations – cost

Perhaps predictably, whether by dint of purchase or running costs, all of the ICE-drivers said that cost considerations impacted, or would impact, upon their choice of car – *‘I think it will for everyone, won’t it?’* (#1) – with some ICE-drivers already citing it as a practical concern. All bar one of the ICE-drivers cited purchase costs, most citing this alone, although some (#5, #6, #8, #9 and #12) cited both purchase *and* running costs. Just one ICE-driver (#11) failed to note purchase costs at all, instead only citing running costs, which may be a corollary of their having no input into the buying decision (see above).

Exactly how cost considerations impacted upon car choice varied. Purchase methods had an impact, whether in buying a vehicle outright and so *‘shopping at the bottom end of the minibus market’* (#3), or acquiring their car on finance and having to consider the *‘outlay for the car, monthly outgoings to pay for the car’* (#8). Echoing the sentiments of ICE-driver #1, quoted above, ICE-driver #7 noted that *‘I still think that capital cost is the one that most people think about’* – perhaps even more so in such straitened times, given the current financial climate – and that for them, having also acquired their car by default via relatives, *‘the capital cost was quite cheap – we did pay for it, but it was considerably cheaper than, let’s say, purchasing a good second-hand car that might have lower consumption’*.

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Purchase cost acted as a constraint *‘to some extent’* for one ICE-driver, in that *‘I’ve got a range that I was looking at, but not to the extent to which I would have compromised’* (#2) and for another who said that, as far as cost considerations were concerned, *‘if I’d more money, I’d have bought a better car, but the running costs, not really, no’* (#12). A similar, but nonetheless different, idea of cost-influenced car choice was noted by ICE-driver #5 who, in admitting that both purchase and running costs were a factor for them, said that they *‘could have had something a bit older, that would be maybe a bit flashier, but would have had higher running costs’*.

Value was a consideration for one ICE-driver in that, in having decided to replace their Vauxhall Zafira with another, they felt the Zafira was *‘one of the cheaper end’* and, as such, that *‘they come out favourably if you compare them to the [VW] Tourans and stuff’* (#6); similarly, another ICE-driver cited value for their less than rational purchase in that *‘the [Mazda] MX5s are phenomenal value ... to buy another sports car to do everything that this could, I wouldn’t be able to afford it’* (#4).

6.3.2.3 Car considerations – environment

Responses were more mixed insofar as environmental considerations were concerned. Half of the ICE-drivers said that the environment impacted upon their choice of car and even then to a varying degree. Some were certain that environmental concerns had figured in their decision-making with one declaring that they’d looked at *‘something along the lines of economy ... something that was as efficient as possible ... it was far more important than performance anyway’* (#8) and another stating that it was *‘more of a whole life decision’*, citing the size of their car being concomitant with the fact that *‘it wouldn’t have taken much energy to make it’* and that *‘it won’t use that much energy in its lifetime’*, while also noting the recyclability of their car, saying that *‘I didn’t want one of these cars that’s just going to rot away in scrapyard somewhere when it’s reached the end of its life’* (#10). Although having no say in the final decision of the choice of car, another said that they looked at *‘different options, like in terms of tax bands and emissions and things, we weren’t in a position to look at alternatives like electric vehicles’* (#11).

Others who cited an environmental influence did so to a lesser degree, with one saying that their vehicle was chosen because of a public-transport-friendly commute, otherwise

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'we may well have not got this vehicle, because there is absolutely no way I would commute in a vehicle like this', meaning that it *'only gets run out at weekends or holidays or day trips or practical moving stuff around'* (#3). Alluding to the energy resultant from the manufacture of a car (2.5), another noted that because all their vehicles are old, their rationale was that *'their environmental impact has already been absorbed'* and that although *'they may give out a few more carbons than a modern vehicle, and consume a little bit more fuel, to make a brand new vehicle and drive a brand new vehicle, the impact would be even greater'*, adding that driving an older car *'is like recycling'* (#4). This view was echoed by another who suggested that *'you've still got to build the car, so the longer you run a car, the less impact it actually has'* (#5).

It is interesting to note that some of those ICE-drivers who said that the environment wasn't a consideration on their choice of car didn't disregard such concerns entirely, saying that *'this goes down to affordability ... I would love to be able to say that I think green most of the time'*, citing the cost of leasing a car under the recent CABLED scheme saying *'I think they charged £299 a month, quite a considerable amount'* (#9), with another admitting that while environment concerns didn't figure in the choice of their car (acquired cheaply from relatives), *'if I was to choose a vehicle for my own choice of vehicle, they would'* (#7). Another ICE-driver who acquired their car from relatives noted that their car *'is a 1.6 [litre] and I'd have preferred a lower capacity, it's cheaper road tax and less emissions and I don't really need the extra performance'* but the cost of choosing something similar meant that *'it wasn't really much of an option'* (#1).

One ICE-driver said that the lack of environmental consideration in their choice was exemplified by the fact that in changing from their previous diesel car to a petrol car, they *'went from a car that had the least car tax band into quite a high car tax band because of the emissions'* (#2), although the increased NO₂ and PM emissions over petrol noted by Holmén and Niemeier, (2003 – see 2.5) means that diesel is not as environmentally friendly as CO₂/km-based VED bands (2.7) would have us believe. The responsibility of car manufacturers was alluded to by two ICE-drivers, with one noting a preference for a diesel version of their car *'because I wanted it to be cheaper for us'* but expressing that their *'trust of the manufacturers is that the best technology is*

available at the time you're buying the vehicle' (#6) and another stating almost categorically that while 'I love the environment, I love the countryside and all the rest of it, but I want to be able to enjoy myself and I think it's up to the car manufacturers to be able to get this level of performance while still meeting the environmental aspects' (#12).

6.3.2.4 Car considerations – culture

ICE-drivers who said that cultural influences had affected their choice of car were seemingly in the minority. Despite adopting an approach that was tantamount to being *'almost an investment appraisal decision'* one ICE-driver said that they thought that cultural influences had nonetheless *'impacted on my choice of car'* and that *'it impacts on how I feel about driving it'*, adding that when their make and model of car is advertised *'it's always a lady driving'* and that *'I very rarely see a bloke driving a Citroën C1'*, while almost lamenting the age and type of their car by noting that *'it's like wearing a crap pair of shoes'* (#10). Another ICE-driver who admitted a cultural influence referred to *'cultural terms of what's deemed as a good car maker'* noting that *'expensive brands ... probably come more culturally in films and music and that type of thing'* (#11). An interesting, almost dissonant, response came from the ICE-driver who cited their friends' cars as a cultural influence, but had to admit that *'financial restrictions meant that we couldn't buy what we wanted to ... pragmatism and realism almost ... kicked in, really'* (#8).

The majority of ICE-drivers denied cultural influences on their choice of car, but with some interesting nuances and caveats. One admitted that *'it definitely has over the course of my life. It didn't influence me to buy this specific car'* although *'when cars have been characters in films that I've enjoyed ... that's definitely heightened my interest in cars and driving'* (#12). One ICE-driver who said cultural considerations bore no impact on their choice of car admitted that *'I would agree it can ... I've had vehicles that are the latest image cars et cetera. I'm sure I was affected many years ago by having a Ford Capri because of some TV series or whatever'* (#4). When asked about any cultural impact on their choice of car another said *'no, but I can see how they do in general'*, qualifying this by saying *'I've stood with my 14 year old son outside an Aston Martin garage ... and gone 'ooh, beautiful car', you know the James Bond DB-*

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whatever-it-is’ before reiterating that, to them, ‘*a car is something you get from A to B in*’ (#6).

A contrary view was taken by a ICE-driver who, while their choice of ‘inherited’ car wasn’t influenced culturally, admitted that such influences do matter ‘*almost certainly, otherwise people wouldn’t spend so much money advertising their vehicles*’ and also noting the ‘*James Bond type things, that sort of looks at cars being aspirational*’ and ‘*things like Herbie ... something that brings about some sort of connection with that type or model of vehicle that is seen to be fun or whatever*’ (#7). The response from the ICE-driver who said that their choice wasn’t culturally influenced, despite recalling promotions such as ‘*the Mazda advert, the va-va-vroom (sic)*’ [the phrase used by Mazda in their advertisements was ‘zoom-zoom’ – the phrase ‘va-va-vroom’ was appropriated by Renault in advertising for their Clio model] before adding ‘*but whether that’s subliminal or not, I don’t know, but I’d like to think not*’ (#2) was interesting as it echoed the sentiments of another ICE-driver who also denied any cultural influence upon their ‘inherited’ car, adding ‘*and I’d like to think it wouldn’t if I got another one*’ before adding ‘*though you’re always influenced subconsciously even if you don’t know about it, that’s why marketers get so much money*’ (#1).

The minibus owner (#3) noted that their choice of vehicle was a purely practical choice, with the marque chosen on the basis of parts availability, yet nonetheless afforded a cultural reference during the interview by describing their vehicle as ‘*my scruffy old Dingle minibus*’ in reference to the popular ITV soap opera ‘Emmerdale’. A budget-based denial of a cultural influence on their car choice came from the ICE-driver who noted that ‘*if money were no object, then it would have been a factor, because I think that certain cars have certain stereotypes*’ before adding that ‘*because money is the main factor simply, then no, it particularly didn’t*’ (#9).

6.3.2.5 Consideration considerations

The motor car is an expensive item, routinely cited as the second most expensive purchase we make after our houses, so it is no surprise that practicality and cost concerns were important to ICE-drivers. Enquiring after such considerations was done not so much to see *what* these considerations might be – as was suggested above, cost

considerations surely affect everybody to a degree – but rather *how* they might compare to environmental and cultural considerations.

The response to cost considerations suggests that a low carbon vehicle uptake, especially an EV uptake, may be problematic. The overwhelming response regarding the purchase price of a car, with some ICE-drivers also citing this as a practical consideration, supports the observation made by ICE-driver #7 with regard to its place as a primary concern and, as noted in 2.6.3, EVs are comparatively expensive although their list price is coming down. However, the fact that EVs are much cheaper to run than conventional ICE vehicles (see 2.7) means that, until EV prices reach parity with ICE equivalents, it is important to consider the whole cost of ownership i.e. both purchase and running costs together (e.g. McMorris *et al*, 2012). However, current high prices of EVs means that most motorists may be unable to enjoy the whole life cost benefits of EVs – at least, for now.

The fact that environmental considerations were recognised, if not currently acted upon insofar as car choice is concerned, suggests that a low carbon automobility is possible in the future. Exactly what constitutes an environmentally friendly car is discussed elsewhere (5.4.1) but its mention is encouraging as it points to an engagement with the environmental impact of the car. The observation made by ICE-driver #2 regarding a higher tax band, and therefore little environmental consideration, seemingly discounts that there is more to automobile emissions than CO₂, and suggests uncertain knowledges insofar as the motor car's environmental impact, and whether the trust placed in manufacturers by ICE-drivers #6 and #12 is misplaced remains to be seen.

The opinions expressed regarding cultural considerations, described in 2.4, are interesting. That some ICE-drivers said they could understand how the cultural may influence car choice, even if didn't influence *their* choice of car, concurs the rationale of this study as well as confirming the importance of cost and practical considerations. The recognition of the engagement of marketers by ICE-drivers #1 and #7 implies that there may be something in the notion of advertising as a cultural form, as does the suggestion from ICE-driver #10 of an apparent 'gendering' (see also 2.3) of their small car, while the misquoting of the advertising slogan by ICE-driver #2 would indeed point to the subliminal potential of advertising. The admission of film and television

influences by ICE-driver #4 also hints at the power of culture, and the cultural reference made with respect to ICE-driver #3's 'Dingle' minibus is telling.

Overall, it is interesting that the impact of both environmental and cultural considerations upon car choice and opinion were recognised by ICE-drivers, if not actually performed in their choice of vehicle. The extent of low carbon vehicle knowledges was explored in 5.4, and how media such as television, films, books, music and advertising, which may act as either a barrier or lever to low carbon automobility (figure 3.1/6.2), might influence automotive knowledges and opinions are explored in 6.4.

Incidentally, such considerations are perhaps both challenged and affirmed in the ICE-drivers automotive aspirations such as '*a Ferrari*' (#1), '*a soft-top Mercedes*' (#2) or '*an Aston Martin DB7*' (#10), aspirations which would appear to contradict the notion of the motor car as a mere tool, and instead show how the car can, in certain forms, go beyond mere utility and/or environmental ideals, even though (or perhaps even because) such automotive aspirations may never be actually realised. The fact that such automotive aspirations may never be realised is immaterial; they nonetheless exist and can transcend the mundane 'A-to-B-ness' of the motor car.

Having considered the rationale behind the ICE-drivers' car choice, we must now look beyond the utility of the car and consider how the motor car can make us look (or think we look). Firstly, I consider the various sources of automotive knowledge which may (or may not) influence automotive perceptions, before considering the notion and place of the car as socio-cultural artefact as a source of automotive knowledge key to the consumption of the car, subsequently manifest in the car as avatar.

6.4 Cars in culture, culture in cars – the car as representation

The notion that the car "enshrines and projects the values of the culture that created it" (Bayley, 1986 – see 2.3) suggests the car is indeed a culturally dynamic artefact, not only in production (Gartman, 2004) but also consumption. However, the consumption of any object or artefact stems from acquired knowledges resultant of the 'flows' between ourselves and said objects (e.g. Stewart, 2007) that is concomitant with the

essence and nature of both ourselves and the objects in question (3.4.1.1), and by which a cognisance or *savoir* (Lyotard, 1984 – see 3.2 and 3.3) is attained.

This study is predicated on the notion that the socio-cultural consumption of the car, premised upon automotive knowledges (see figure 3.1/6.2), is an under-reported aspect of automobility (see also Hawkins, 1986 – 2.3). So how is the socio-cultural aspect of the car, *et ergo* the car itself, perceived and negotiated, interpreted and performed?

6.4.1 Car'n'all knowledge – information sources

It can be argued that a key aspect of socio-cultural consumption stems from the source of knowledge, as this can influence what and how we regard all manner of artefacts, including the car. The online questionnaire asked of returnees where they derived their knowledge and/or opinion of the car and the results are depicted in figure 6.10.

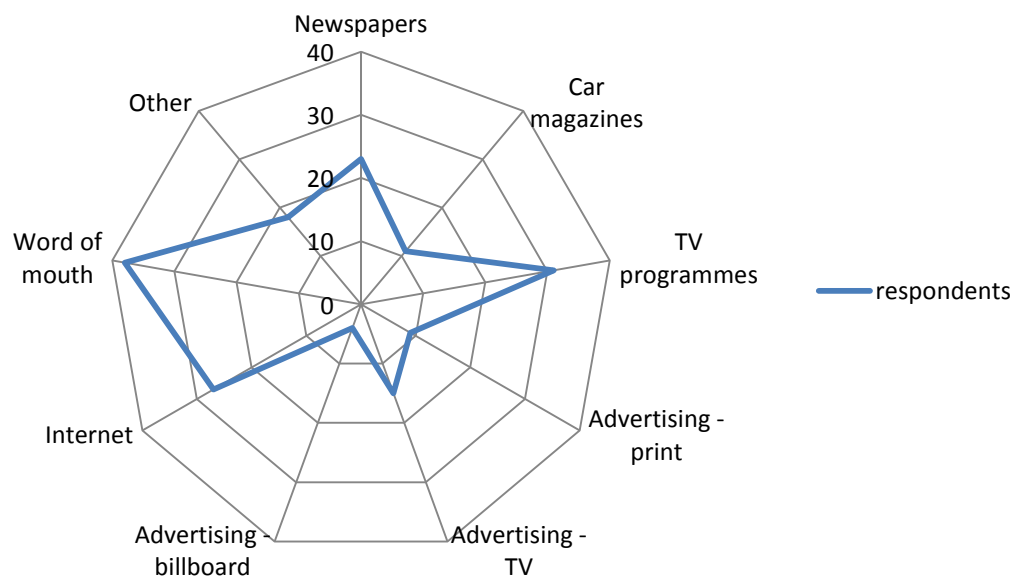


Figure 6.10 Sources of questionnaire returnees' knowledge/opinion of cars

Insofar as the acquisition of automotive knowledges is concerned, 38 of the 57 returnees said they derive their knowledge and opinion of cars from word of mouth – whether this consists of advice, recommendations or general chat is a moot point, but it seems ICE-drivers were more likely to be informed or influenced by other people than

6. *Automotive for the people*

by any other source. This, in turn, begs the question of from where do such other people, whether family or friends or colleagues, get *their* knowledge and opinion.

By contrast, just 11 returnees derived their knowledge or opinion from the specialist motoring press, with 23 returnees saying that they sourced their knowledges from newspapers, with even more – 31 returnees – likely to derive opinion from television programmes. The internet was a source of knowledge and/or opinion cited by 27 of the 57 returnees, though of course there are a myriad of sources such as personal blogs, manufacturers websites or car magazine and car review websites therein. Perhaps surprisingly, especially given its cultural capital (see 2.4), advertising doesn't feature strongly as a means of knowledge or opinion, whether on television (15 returnees), in print (9 returnees) or on billboards (4 returnees).

These results are redolent, if not exactly a mirror, of those of a survey of women carried out in the US by the website BlogHer.com, which found that word of mouth also featured highly (56%) whereas the motoring press (21%) and TV advertising (16%) were less popular sources of information (BlogHer, 2012).

Given the broad and sometimes ephemeral nature of the internet, it is pertinent to look at more the 'concrete' media of television and newspapers as key sources of knowledges. I use the term concrete in this respect to refer to hard copies of newspapers which are easily kept after sourcing, whereas internet pages are constantly being updated or even deleted while television, though also being perhaps ephemeral, has the capacity to secure subjects or objects into our consciousness, the retrieval of which can come from memory or, more prosaically, from repeat broadcasts. As noted above, despite its apparently lesser impact (figure 6.10), advertising can itself be regarded as cultural, and so its assessment is nonetheless important, especially as it may actually have a greater impact upon an automotive consciousness than is perhaps realised.

The impact, or otherwise, of television and advertising as a source of knowledges of the car is addressed here. The way that newspapers act as a source of knowledges of low carbon vehicles was addressed in 5.4.4.

6.4.2 Automotive recognition

For the car to be recognised as possessed of any cultural connotations, a recognition of cars themselves is crucial, whether this is by make, model or even just the type of car therein. To this end, ICE-drivers were asked as to how they judged their own ability to recognise different makes and models of cars, while a picture quiz of cars in films and television (appendix 3) – ostensibly designed as a form of icebreaker – was deployed at the focus group sessions.

6.4.2.1 Spot the car?

There was a universal consensus among ICE-drivers that they could indeed recognise different makes and models of cars, though to various degrees, with abilities being ascribed both numerically and descriptively.

ICE-drivers rated their car identification abilities widely, ranging from *‘about 70% maybe ... 60 to 70%’* (#8) up to *‘in the 90s I think, yes. I watch lots of car programmes ... I’ve got lots of car apps on my phone, I read lots of car magazines, so ... I’ve been obsessed with cars from a young age’* (#10). One ICE-driver cited their line of work in suggesting of their car identification ability *‘yeah, fairly knowledgeable, I think. I’m out with the police fairly often, so ... doing different initiatives, although ... probably most of them, all the well known ... the regular makes’* (#6), with other comments being *‘reasonably well’* (#4) and *‘pretty well. Possibly ... there might be the odd obscure one’* (#5).

Others were less sure. One ICE-driver said *‘makes; maybe not models’* (#2), sentiments echoed by ICE-driver #9 who, while claiming to be able to identify *‘something like 80% of makes’*, suggested a uncertainty over identifying individual models, noting that *‘cars have lost their individuality’*. This last observation hints at the platform sharing and, to a lesser extent, badge engineering indulged in by car manufacturers noted in 2.3, and is perhaps instrumental in a similar claim made by ICE-driver #3 in that identification *‘gets harder as the cars get more and more similar; it was definitely easier in previous years’*.

Given these claims, that the ICE-drivers were seemingly able to recognise different makes and models of cars suggests that they may be in a position to subsequently

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transfer any notions or values acquired from media such as film or television to vehicles they might see every day. But how adept are people at recognising cars on both the large and small screen?

6.4.2.2 Quiz call

It was noted in 2.4 how the appearance of cars in films and television might influence the negotiation and contestation of what a car ‘is’ or might be, manifest in our consumption of the car, consciously or otherwise. But to what degree might this be the case?

As mentioned in 6.4.2, participants were presented with ten pictures of cars from films and television (see appendix 3), and points were awarded in the fun quiz on the basis of one point scored for each of make of car, model of car and the film/programme in which the car was featured. Therefore, with eleven participants over the two focus groups (seven in Rochdale and four in Coventry) the extent of knowledge was measured by counting the number of correct identifications of marque, model and film/programme out of an overall total of 111 (10 pictures, 11 participants) in each category.

Although intended as an ‘ice-breaker’, the fun quiz provided some interesting insights and underlined some popular automotive misconceptions. Overall, the participants found it easier to name the film or television programme than to identify the car featured therein, admitting that *‘I found the programme easier than the exact make and model’* (BF_RMBC) and *‘the specific models, I didn’t get many of’* (AD_CCC), statements corroborated by totalling up the ‘points’ scored in the quiz. Overall, there were 81 correct film/television programme identifications (73%) compared to 64 correct marque identifications (58%) which, in turn, proved easier than identifying the model of car, with only 48 correct identifications (43%).

This in itself is perhaps unsurprising as only those interested in cars and motoring might be interested in the exact model of car used in the film/television programme. However, it does highlight how the car can act as an identifier for the film or television programme in question, as noted by the participant who said *‘They’re all totemic cars basically, they’re all symbolic of that programme. So like when I saw that piece of*

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paper, I was like “yes, I can name all those programmes straight away” but when you had to go into the detail about what model it was and stuff ... the car was instantly associated with ... the association was instant and true’ (CT_RMBC). The notion of car-as-identifier in this context is strengthened if we count the identification of the film franchise, as opposed to the particular film within the franchise, as a correct answer. For example, picture #1 in the quiz was of a Lotus Esprit in a scene from the James Bond film ‘The Spy Who Loved Me: only one participant named the film specifically, whereas all the other participants did identify the picture as from a James Bond film. If we permit the identification of the franchise over the film in this case, the total of correct film/television programme identifications rises to 91 out of 111 (82%).

The notion of the car acting as an avatar or identifier for a film or television programme is perhaps underlined if we observe that pictures #2 and #4 were from American television programmes – Knight Rider and The Dukes of Hazzard – which were recognised by an overwhelming majority of the participants, while only a minority could identify the cars therein. Another interesting observation from the quiz was that there was only one picture (specifically picture #6 – the Volkswagen Beetle from the ‘Herbie’ film series) where everyone identified the make, model and film/television programme; this reason for this may lie in the ubiquity of the Volkswagen Beetle, the reach of Disney films or perhaps even the anthropomorphism of the car behind the film series; having said that, following the observation regarding picture #1, it could also be because the picture was from an indeterminate film in the ‘Herbie’ series. It could even be all of those reasons.

Overall, then, it seems that a car may serve as an identifier of a particular television programme/series or film/franchise rather than a particular television programme/series or film/franchise might do of a car. But how might different cultural forms inform the consumption and regard of the car?

6.4.3 The car in culture

Section 2.4 contemplated how the car might be represented culturally and what impact this may have upon the knowledges gleaned and subsequently deployed in the consumption of the car. But what cultural and automotive knowledges or *savoir* (see

2.3, 2.4 and 3.2) do people derive from different cultural forms, and how is such cognisance manifest?

6.4.3.1 The car's the star

When asked as to whether they thought that the presentation of cars in films or television programmes would have a bearing on how people would regard it, there was broad agreement among both focus groups that it would. One participant said it would *'hugely – possibly more than any other factor'* (SG_CCC), perhaps because the vehicle in question *'gains some status from something happening that you're watching ... becomes iconic, I suppose, kind of iconic'* (AD_CCC) meaning that *'you associate them with being classy or sporty or whatever'* (AC_CCC). As to why this should be the case, another participant alluded to the interplay of meanings between characters and cars noted in 2.4, in that *'the cars are obviously chosen because of the characteristics of the characters in the film or programme and you come to identify with that'*, adding that any associated merchandising played a role to this effect in that *'as a kid, you would play with the toy cars and stuff like that. It's important in that sense'* (BF_RMBC).

Citing the pictures in the fun quiz, another participant made a perhaps key observation in that the *'cars become known as characters and if you liked what character the car was, then that helps form an opinion on whether you wanted a car like that or not'* (MF_RMBC). Similarly, it was pointed out that *'some of those are not meant to be desirable. Like in Only Fools and Horses, that is meant to be clapped out and a bit of a joke; they were never trying to make that car cool. And Herbie is supposed to be fun and a bit of a character, but not like 'yeah you're going to be cool in this''* (BF_RMBC), although we may have different opinions on what may constitute a 'cool' car. Another observation emanating from the pictures in the quiz came from a female participant who said that *'these are all quite masculine cars. I wouldn't be bothered about getting one of these cars. When I think of a car programme, I think of, like, 'Bump' [sic – actually 'Brum', a children's television programme] – remember on ITV, the car that drives itself around?'* (AM_RMBC).

This observation by AM_RMBC hints at the gendering of the car (see 2.3), in that the cars in the picture quiz can be said to be associated with male characters. Indeed, there are perhaps fewer cars associated with female characters in film and television than are

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associated with male characters. In addition, the childhood playing with toy cars noted by BF_RMBC, whether as ‘spin-off’ merchandise or otherwise, is/was traditionally associated with boys more so than girls (Colley *et al*, 1996; Francis, 2010).

The potential influence of the presentation of cars in film/television programmes on sales was noted, with one participant saying that ‘*some car companies certainly sold a lot of cars on the back of some of these*’ (NB_RMBC), with one exchange citing the original version of the 1969 film ‘The Italian Job’:

BF_RMBC: *It made a massive difference to Mini sales, The Italian Job. They weren't doing that well before The Italian Job, I don't think.*

CT_RMBC: *It kind of ... sort of saved them a little bit, I think. It gave them a massive boost apparently.*

BF_RMBC: *Because it was such a different kind of car when it came out to other cars around, I think they were struggling to get any sales but, on the back of that film ... 'I want to drive through Rome...'*

RS_RMBC: *I didn't want a Mini until I saw The Italian Job. I really love The Italian Job and I would have a Mini now because I just ... they've got a lot of character about them.*

A pertinent suggestion made regarding the potential sales impact of films and television programmes was that ‘*affordable cars such as the Mini Cooper and the [Volkswagen] Beetle, you know, obviously did have massive sales, probably influenced by being in these films, and so if they're affordable, then it probably does have an impact on people buying them, just because it's been on the film and just because it's become iconic*’ (JW_CCC), although the converse was perhaps true regarding more expensive cars since ‘*the Lotus Esprit at the time will have been quite a luxury, so there's only a certain number of people that would actually have been able to afford it if they desired it*’ (JW_CCC).

The place of the car in the James Bond film franchise was widely mentioned, in that the films ‘*have done a lot to promote the car – the Aston Martins and all that stuff*’ (AC_CCC). The use of Aston Martin in the James Bond films was a common observation and the brand seems synonymous with the character, even though the

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makers '*rudely threw in a BMW at times ... it's unusual for it not to be an Aston Martin or a classic like a Lotus Esprit*' (AD_CCC). It was also thought that the use of Aston Martins in the franchise '*really kind of changed the brand ... made it a really desirable brand*' (NB_RMBC); indeed, Aston Martin was named as the UK's 'coolest' brand in 2010 and 2011, and 'third-coolest' in 2012 (BBC, 2012).

When considering the presentation of a car in films and television, it is important to bear in mind that the interpretation of a car's meaning therein doesn't solely lie with us as viewers and/or consumers. As noted in 2.4, such meaning is also subject to negotiation and contestation of a car's meaning by writers and directors in how a character's car is aligned, and also by actors as to how this is projected on the screen. A car's representation in films and television can therefore be dependent upon the *savoir* or cognisance of writers, directors and actors, how they themselves have 'consumed' the car, or a car, and just as manufacturers views of their product may differ to our view of it in terms of advertising (see 6.4.3.4, below, and 2.3), so it is possible in films and television for a car to be subject to unintentional consumption, as illustrated by the response to James Bond's driving of a BMW, above.

As the conversation flowed, the Coventry focus group was asked if the product placement of cars would help low carbon vehicles such as the Nissan Leaf and the Toyota Prius. It was felt that it would be positive '*if they're in context, yes, if they put it in a good light*' (SG_CCC), citing the way that the Reliant Regal van from the BBC sitcom 'Only Fools and Horses' is used for comedy. The importance of this caveat was underlined by the participant who agreed, warning that '*if Jeremy Clarkson's writing a sitcom and there's an electric car in it, you know exactly what's going to happen to it*' (AD_CCC). An interesting suggestion regarding the product placement of low carbon vehicles was that '*they should bring it into a Disney film now, then maybe as those kids are growing up they'll think of that car in the way that maybe we did with Herbie*' (JW_CCC).

The influence of films and television programmes upon how the car is consumed is perhaps obvious, and the responses detailed here provide an interesting insight into how this may be manifest and how an automotive *savoir* or cognisance may be acquired. As we shall see, however, the influence of music and literature is rather less pronounced.

6.4.3.2 The car in literature – on the write road?

Despite an observation made claiming the omission of cars in contemporary fiction as akin to that of horses in Westerns (in Taylor, 2008 – see 2.4), the place of the car in books was markedly less well noted by either of the groups, especially compared to any film and television presence. For example, the aforementioned observation was put to the Coventry focus group, who was asked if they would agree with it:

AD_CCC: *I don't know, I don't read books.*

JW_CCC: *The only one I can think of is 'Christine' by Stephen King, which is solely about the car, isn't it?*

AC_CCC: *I read quite a number of books, but the only books I tend to read necessarily don't mention cars at all, apart from the fact that you get in and drive it. That's as far as it goes really.*

The place of cars in fictional literature wasn't mentioned by participants of the Rochdale focus group at all which suggests that, despite the literary connection noted by Samuels (2002 – see 2.4), books play little part in informing opinion upon the car.

It is noted elsewhere in this report (6.5.5) that an exposure to music via in-car entertainment systems can play a role in how the car is experienced, if not actually consumed as such. However, might the music, the songs, played in our cars play a role in how the motor car is consumed?

6.4.3.3 Auto-tune

Whether it is by dint of their more transatlantic nature (see 2.4) or perhaps the lack of recent automobile-referenced songs, the place of the car in music was rather less noted than was the case in more visual media and, as was the case with the car in literature, was little discussed. Insofar as the discussion regarding the place of the car in music was concerned, one participant observed that *'there's a lot of songs about driving in general, you know the association with freedom, but I can't think of any that go into the actual detail about the actual car itself. It's normally just the concept rather than the actual character of the car'* (SG_CCC). An interesting insight into generational and

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geographical brand perceptions was highlighted in an exchange on the car in music which prompted some laughter:

RS_RMBC: *I remember listening to ... I can't remember who was the rapper, but there's a rap song and he was talking about a Lexus he had, and I couldn't understand it because Lexus's aren't particularly cool, but it stuck in my mind. He was talking...*

SK_RMBC: *Do you not really get rap songs about reliability and a certain amount of economy?*

CT_RMBC: *Is this like a middle-aged rap style 'I'm looking for reliability and comfort'...?*

This discussion about the perception of the Lexus brand in culture moved back to television, and continued to highlight some geographical differences in perceptions:

NB_RMBC: *...in the US, they've got this cool image, and in the UK, they're kind of Alan Partridge cars, aren't they?*

Q. *Because he had one, didn't he?*

CT_RMBC: *Who?*

NB_RMBC: *Alan Partridge.*

MF_RMBC: *That played a key part in his image.*

CT_RMBC: *Did he have a Rover?*

NB_RMBC: *He did have a Rover, and he replaced it with a Lexus.*

CT_RMBC: *Right. I bet Lexus were devastated, weren't they?*

With the character of Alan Partridge being perceived as less than positive, this example shows how popular cultural mediums can, as is the case with 'Del-Boy's' 3-wheeled van in 'Only Fools and Horses', invoke a potentially negative impact upon perceptions of the car in question. However, it is interesting to note that while the Del-Boy's van was a much older vehicle, the cars used by the Alan Partridge character tend to be more contemporary (see IMCDB, 2014).

From the quotes above, it is clear that as far as cultural references to the car are concerned, far greater emphasis was placed on the car in films and television than in

literature or music. However, one form of cultural media that was discussed at length during both focus group discussions was advertising.

6.4.3.4 Car advertisements – sold as seen?

When it came to discussing car advertisements, modern car advertising attracted some opprobrium from participants in both groups, being described as ‘*instantly forgettable, they just merge into each other*’ (NB_RMBC). This participant elaborated on this point by adding that:

NB_RMBC: *There’s a few that stick in your mind, some of them are quite old. Obviously there’s the famous Paula Hamilton Golf one [where a woman dispenses of the trappings concomitant of her partner (fur coat, jewellery) but thinks twice about doing likewise with the key to a VW Golf GTi before driving off in it], but there’s another that sticks in my mind and that’s the Audi one where they’re saying ... they’re got this BMW sort of driver that tries it out and says “nah, it’s not really for me”.*

Q: *I know the one you mean.*

NB_RMBC: *Audis are now obviously driven by BMW-type drivers anyway, but that’s one that kind of stuck in my mind, but there are very few that kind of don’t merge into each other.*

This observation is interesting in a number of ways, in that not only does it critique modern advertising, but it also suggests that motorists can be as much a part of the ‘product’ as is the car they drive, a notion that resonates as much with Dant’s ‘driver-car’ hybrid (2004 – see 2.3) as any manifestation of Thrift’s ‘technicities’ (2008 – see 3.4.2.4). In addition, the suggestion that one ‘type’ of motorist now drives a different type of brand (or type) of car provides a hint as to the culturally dynamic nature of the motor car.

Another view on modern car advertisements was that ‘*they can be so pretentious*’ (SG_CCC), with this comment being underlined by the participant who said that:

‘the thing that gets me about car advertising is that, especially the modern ones even more than the older ones, they all ... they tell you nothing about what the

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car's capabilities are. The worst one ... there's one out at the moment for a car called the [Vauxhall] Mokka ... the advert literally shows the car driving around and it's ... all it shows is this slightly strange-shaped car that comes in a range of different colours. That's it. And it doesn't tell you anything at all about what it does'. (SK_RMBC)

It is interesting to note that both groups independently identified the same car advertisements, which says something for their effectiveness. For example:

AC_CCC: *The only one I can remember is the annoying Renault Clio ones...*

Q. *Which of the Clio ones?*

AC_CCC: *You know...*

JW_CCC: *Papa?*

AD_CCC: *Nicole?*

AC_CCC: *...yeah, picks up some woman and drives around.*

This particular Renault Clio advertising campaign was also recollected elsewhere, as was the apparent pretentiousness of the succeeding campaign:

NB_RMBC: *I remember the Renault Clio adverts with ... er...*

BF_RMBC: *Nicole and Papa?*

NB_RMBC: *Nicole and Papa. But the one after that, you had the one with Thierry Henry and, basically, if you drove a Clio, you had Thierry Henry's lifestyle...*

BF_RMBC: *Because he drives a Clio.*

CT_RMBC: *The one where he had it hanging from the roof was it? That was ridiculous...*

Both groups mentioned Honda's advertising campaigns, describing them as 'fascinating and they're great to watch' (AD_CCC) and noting that 'they're abstract' (BF_RMBC) and that 'some of the Honda ones are good because they're ... they sometimes focus on the technical ability or mechanics of the car, rather than just putting the car there on the screen' and recalling their strapline 'the power of dreams' (MF_RMBC), thereby illustrating Baudrillard's assertion that advertising is itself an object to be consumed (see 2.4).

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An interesting – if perhaps erroneous – premise posited about advertising cars was that the need to advertise was predicated on desirability, or the lack of it, in that *‘if you’re advertising to sell a car, it’s a car that nobody desires, because Porsche, Ferrari, Aston Martin ... none of the people who ... none of the cars that everybody desires, nobody advertises them’* (CT_RMBC). The premise is erroneous because marques such as Porsche and Aston Martin do actually advertise in the motoring press and non-tabloid newspapers. Another avenue of promotion was also noted, however, in that *‘they do advertise in a different way though, don’t they? Motorsport...’* (NB_RMBC). The use of motorsport – such as Formula 1, the World Rally Championship or the forthcoming Formula E electric racing car series – as a means of promotion was highlighted elsewhere:

AD_CCC: *It’s about winning and that makes your brand stand out.*

AC_CCC: *The best form of advertising, isn’t it? To be the winner...*

AD_CCC: *There was a direct correlation between Audi winning Le Mans with their turbo-diesel and the sales of Audis in general, especially the sport version.*

There was a sharp contrast in opinion between the two groups regarding the prevalence of environmental messages from car advertisements, with one noticing *‘a small but increasing number of adverts that are referring to things like emissions’* (BF_RMBC) and suggesting that *‘it’s all mpg and eco-stuff now ... I think every car salesroom’s got some big poster or banner about mpg or has got an eco-model’* (CT_RMBC). However, the view from the other group was rather more downbeat regarding environmental messages, claiming that they had *‘disappeared quite dramatically’* (AD_CCC) and that any promotion of fuel economy *‘has probably taken a step back recently’* (SG_CCC), citing the fact that *‘the Ford EcoBoost thing, they’re purely selling on the fact that it’s cheaper and you go further, not on that it’s better for the environment’* (AD_CCC).

The reasons behind the latter observations appear to be rooted in the contemporary climate of financial austerity. For example, it was noted that *‘this recession is seriously one of the biggest hamperings to the expansion of electric cars, because you just ... you*

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can't afford it and you can't justify it' (AD_CCC). This exchange also hints at how any environmental messages may be relegated in the current fiscal climate:

JW_CCC: *...if you produce an electric car that people are going to think is affordable, then maybe you're going to go into the realm of 'yeah, let's think about the environment' but, until then, the first thing on everybody's mind, I don't know, is money.*

AD_CCC: *Yes it is. You've got to feed your kids, pay a mortgage.*

JW_CCC: *Yeah, you've got to be able to put petrol in the car to bring it to work every day and park it, which is too expensive as far as I'm concerned.*

AC_CCC: *Well I do 50 miles a day round trip to work and back, and the first thing on my mind is the cost of running the car; not whether it's environmentally friendly, but what it costs me in the pocket.*

With such a collective mindset, any environmental messages proffered by car manufacturers in their publicity may struggle for recognition and acceptance, no matter how prominently or engagingly it is presented.

As noted in 4.2.3, both groups were shown four advertisements for ICE cars and four for low carbon vehicles gleaned from the official YouTube channels of Nissan, Renault, BMW and Toyota, marques chosen because they all offer (or are about to offer) both conventional and low carbon vehicles; how the low carbon vehicle advertisements were viewed was detailed in 5.5.3.

It was striking that, overall, the advertisements for the low carbon vehicles were much better received than were those for the ICE vehicles, with the latter all attracting some criticism. While it was intended that participant made notes for discussion after seeing the advertisements, some comments were also made in between individual viewings. Some of these observations and exchanges, whenever they occurred, were quite revealing as to how the advertisements were consumed, as illustrated by the response to the Renault and BMW ICE advertisements for the Megane and 1-series respectively.

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For example, the reaction to the BMW 1-Series ‘One Origin, Two Originals’ advertisement, depicting two versions of the same car driven by ‘brothers’, was quite negative:

SG_CCC: *I think the message was existing BMW drivers will love this car.*

Q: *Any stereotypes coming in there do you think?*

SG_CCC: *It was reinforcing my stereotypes that I’ve got about BMW drivers.*

JW_CCC: *It was jack –the-lad, wasn’t it? Simple as that.*

CT_RMBC: *I hate that. I absolutely hate that.*

BF_RMBC: *I’ve never seen that before and I hope I never see that again.*

CT_RMBC: *Would you buy a BMW because of them two blokes?*

RS_RMBC: *You should write in.*

SK_RMBC: *I shall be running out of adjectives soon...*

CT_RMBC: *Have you seen that comment [on the advertisement’s YouTube page]? ‘Pompous t**t’...*

BF_RMBC: *Have you seen the one [a much ruder comment] below it...?*

Q. *I hadn’t noticed that.*

CT_RMBC: *At least it’s not just us...*

Besides a general negativity, this BMW advertisement also prompted confusion within the groups as to what the differences were between the two versions of the 1-series so depicted. One interesting observation regarding this confusion concerned a brief shot alluding to the engine modes of the car whereby one participant observed whereby one participant said ‘*I noticed one of them had a button they pressed that said ‘eco-plus’...*’ (BF_RMBC) and another said ‘*one had a sport button, I did notice that...*’ (AD_CCC), when in fact the button in question was labelled both ‘sport’ and ‘eco-pro’. From acquaintance with the participants, as well as other statements made during the focus group discussions, it is suggested that the observations made might be influenced by the respective participants’ backgrounds and/or outlooks, hinting at the notion of ‘adequate cause’ posited by Spinoza (see 3.4.2).

When asked to describe the BMW 1-series in one word as a result of the advertisement, participants responded with some negative adjectives such as ‘*pompous*’ and

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‘*annoying*’, with another writing down a one-word insult. Not everyone thought negatively of the car, with one describing it as ‘*classy*’ and another expressing the perhaps qualified opinion of ‘*cool?*’, while the confusion mentioned above prompted one participant to use the adjective ‘*indistinct*’.

With background chanson crooning and accordion music, the advertisement for the Renault Megane – which, incidentally, featured the ‘sporty’ coupé version of the model – featured several French stereotypes in a distinctly non-French setting and attracted a wide range of comments and, from the exchanges that followed its viewing, the car itself appears rather better regarded than the way in which it was promoted.

AD_CCC: *It was a jolly ... I don't know ... it seemed like they put some relatively dim people in there to make me feel good about myself and think 'ok, if they like it, I'm going to like it'.*

SG_CCC: *I think 'fun' was their overall message, but the message I got was sort of 'average'.*

AC_CCC: *The fact that they were trying to sell it on the fact that, you know, there's this suave French guy sitting next to people, these dull English guys that you can, like, buy one of these and have sex appeal for the girls type of thing. That's how it came across to me; condescending.*

JW_CCC: *That's a totally male point of view.*

CT_RMBC: *I like the Renault Megane, but that advert was kind of really patronising. I don't know who it's aimed at. I don't know who it'll appeal to ... basically mocking the people who live in a rural village.*

BF_RMBC: *It almost seemed like a parody of a car advert to me.*

CT_RMBC: *Maybe it was. Maybe we're missing that ... maybe we're not intelligent enough.*

This exchange pertaining to the Renault Megane advertisement illustrates the contextual nature of car consumption and of advertising, and how they might be grounded culturally and geographically (e.g. Edensor, 2004 – see 2.3):

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NB_RMBC: *I think this probably worked in the ad agency in London, that 'what we're trying to say is that this car's for everybody, even weird country folk'.*

SK_RMBC: *Yes, I mean everybody that's in it looks happy and is smiling and there's jolly music in the background and it's a tiny little bit French...*

CT_RMBC: *I just thought ... if you think Renault, you think rural French knackered battered car wouldn't you?*

When asked to describe the Renault Megane in one word as a result of the advertisement, participants responded with an array of adjectives, ranging from 'ordinary' and 'average' to 'fun', 'suave' and even 'pretentious'.

The responses to both the BMW and Renault advertisements illustrate how, as noted in 2.3, a multiplicity of truths can result from a postmodern consumption and rejection of grand or intended narratives (see 3.2) of the advertisers, and so motorists can take quite different meanings from car advertisements than were perhaps intended by the manufacturers (e.g. Foster, 1984; Lyotard, 1984 – see 2.4, 3.2 and 3.3) and, following Baudrillard's assertion of consuming a product's meaning through advertising, they suggest answers to the question posited in 2.4 as to 'whose meaning?'. Gender issues (see 2.3) arose with the observed 'Jack-the-lad'-ism of the BMW 1-series advert and the 'sex appeal' of the Renault Megane Coupé, (one of the advert's characters exuberantly inquired into the car's potential as a 'bird-puller'). The implications insofar as the advertising of low carbon vehicles is concerned are therefore potentially manifold, in that if consumers can reject the intended narratives of an automobility to which we have been conditioned – that of cars as desirable, sporty, powerful, sexy even – then the promotion of cars possessed of a different nature that are innately 'worthy' and of a perhaps more altruistic (for want of a better word) nature perhaps requiring a different approach to automobility, is potentially problematic.

6.4.4 The car as avatar

It has been noted how the car acts as a "mobile signifier ... wrapped in a web of meaning and values" (O'Sullivan, 1998) and, subject as it is to relational semiotic negotiation, the notion that 'your car says what you are' is almost a default postmodern discourse when considering the consumption of the car. As such, a car's appearance – its shape, style, brand, colour, condition - constitutes a primary, certainly initial,

affectual ‘flow’ (see 3.4.1.1) between not only others’ cars and ourselves, but between our car and others as both motorists and pedestrians. So what might cars say about drivers, what do drivers say about their cars, and where might these knowledges come from?

Photographs of the ICE-driver’s cars can be found in 4.2.2.

6.4.4.1 Making our marque?

When asked what they thought that the make and model of the car they drove said about them or said that they were, most ICE-drivers were able to provide an answer, with only two dismissive of the idea, saying ‘*I don’t really think about that. If I was to think about that, I would probably buy a sexier looking car*’ (#1 – VW Polo; figure 4.4) and that the age and condition of their car suggests that they were ‘*not too bothered about what a car says about me. It’s a tool, it’s functional*’ (#5 – Seat Ibiza; figure 4.8).

A perceived status of German cars was hinted at by the ICE-driver who, while not necessarily thinking that the car they drove was a reflection of them, admitted that they would think ‘*that’s a nice car*’ if they saw someone driving the same car as them (#11 – VW Polo; figure 4.14). A relative lack of income was represented by their cars according to ICE-drivers #6 (Vauxhall Zafira; figure 4.9) and #10 (Citroën C1; figure 4.13), in that ‘*it’s not a Range Rover or anything like that*’ (#6) or that ‘*it only costs six grand to buy*’ (#10); both ICE-drivers elaborated their responses, saying that ‘*I’m not that fussed what it says about me ... I think it says we’re a family*’ (#6) and by noting that their car might suggest ‘*somebody who’s considering the environment as well*’ (#10). Occupational representations were mentioned by two ICE-drivers, with one thinking that their car ‘*makes me look like a business rep*’ and wondering what aspersions their car cast regarding their age because ‘*it kind of makes me look a bit dull ... like I’m a bit old before my time*’ (#8 – Ford Mondeo; figure 4.11) and another suggesting that their car simply said that ‘*I’m a commuter*’, although they admitted that, ultimately, ‘*it doesn’t say much at all, it hasn’t got much personality*’ (#9 – Suzuki Swift; figure 4.12). A lack of individuality was inferred by the car of another ICE-driver because their car was ‘*very much a standard and popular model*’, (#7 – Ford Escort; figure 4.10), whereas the converse was felt to be true by the ICE-driver who

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though that their vehicle signified that they were ‘*not normal because, basically, most people don’t drive minibuses*’ (#3 – Ford Transit minibus; figure 4.6).

The car had less prosaic semiotics for other ICE-drivers, with one saying that they thought their car said that they ‘*had a bit of style*’, hopefully ‘*a bit more stylish than a Ford*’ (#2 – Mazda 3; figure 4.5) and another thought that their car said they were ‘*probably a little bit racy, a little bit more individual*’, admitting that ‘*some might consider it to be a bit posey*’ (#4 – Mazda MX5; figure 4.7). A perhaps less than positive impression was also mentioned by ICE-driver who thought that their car might represent ‘*someone flash ... with lots of money ... and the fact that it’s a high-performance car, I don’t care about the environment*’ adding ‘*but I didn’t buy it for any of them reasons*’ (#12 – Audi S3; figure 4.15).

We can see that, as noted in 2.3, cars can relate to the Other (Sarup, 1996) as much as it can ourselves. That is, a car can ‘say’ (or be perceived to say) what owners are not – ‘not’ individual, ‘not’ normal, ‘not’ wealthy, ‘not’ bothered – as much as it can say what they are e.g. stylish, racy, flash. This means that it is important to consider the Other when considering the efficacy of the notion of the car as representation. However, might the semiotics and texts that ‘flow’ from cars provide an accurate or authentic reading? If the car does indeed constitute ‘the ultimate apparel’ (Nieuwenhuis, 2008), were the ICE-drivers interviewed wearing the correct ‘automotive clothes’ (Kershaw, 2006 – see 2.3)?

6.4.4.2 Car mirrors

Only a minority of the ICE-drivers said that they thought that their car was a true reflection of them. Those that did so said this was because their car reflected ‘*my status, my income*’ (#2), because they considered themselves to be ‘*a bit scruffy ... not typical, not normal ... I’m quite happy to not be normal*’ (#3), or because ‘*it’s fast, it’s pacy, it’s old*’ (#4), while another thought that their car was a ‘*pretty close*’ reflection because ‘*I’m not very image conscious*’ and that ‘*being an accountant, I’m very aware of financials and things*’ (#10).

There were a variety of reasons as to why the majority of ICE-drivers didn’t regard their cars as a reflection of them. One stated that this was because ‘*circumstances have*

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led us to this particular vehicle’ (which was bought cheaply from a relative) and that their own choice would have been a car that was more *‘economically environmentally friendly’* (#7): incidentally, the other ICE-driver whose car was acquired cheaply from a relative said that they thought their car was *‘not particularly’* a reflection before adding *‘but I can’t think why not’* (#1). Two ICE-drivers didn’t go along with the notion of identity being bound up with the car (#5 and #11) with one admitting that *‘I am flashy about other things’* adding that *‘my watch is worth twice as much as my car’* (#5). Another thought that *‘it would be a bigger, bolder car if it were a true reflection of me’* noting that their car *‘disappears into the crowd most of the time’*, before suggesting that *‘I don’t think that there are many people who can afford the car that they would like to suit their personality, you know?’* (#9) a notion echoed by another who claimed that *‘I think at a certain value of a car, it just gets you from A to B’* (#11).

Other ICE-drivers were rather less certain as to whether their car was a reflection of themselves or not, with one responding by saying *‘my previous car [a Mazda MX3 coupé] was, or how I like to think I ... was’* before declaring *‘I would say so because it’s practical’* (#6). Another was *‘a bit 50:50 really’* while hoping that they weren’t archetypal, as if they were the Other (see 2.3) of their car, by saying that *‘I’d like to think that I’m not a Mondeo driver’* (#8). This perceiving of what other drivers think was borne out by the ICE-driver who didn’t think that their car was a reflection of them although *‘public perception may say that it is’*, qualifying this observation by saying that one of their colleagues *‘thinks I’ve got this car because I want to look flash, but I don’t want to look flash, I want to drive a driver’s car and get some enjoyment from it’* (#12).

6.4.4.3 Auto-text

As noted in 3.5, I am an avid ‘reader’ of cars. To me, they are as much an automotive text as any car magazine or book. This meant that, during the interviews, I inevitably read something into ICE-driver’s cars as I would any other and, from a brief interview acquaintance, was also able to ponder upon their representativeness and representationality.

The rationale of this section (6.4) was to consider the manifestation of the ICE-drivers’ automotive *savoir* (2.3, 2.4 and 3.2), to assess if the default ‘consumption’ of the car –

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your car says what you are – holds true, and we can see from 6.4.4.1 and 6.4.4.2 that while most ICE-drivers had an idea that their car at least said ‘something’, therefore acting as a ‘text’ of some kind – ideas and ‘readings’ with which I would broadly concur – few felt their car was a genuine representation of themselves.

For example, that ICE-drivers #8 and #12 recognized the semiotics of their cars and yet denied them from contrasting positions is interesting, especially if we consider the responses they gave in 6.4.4.1. The former suggested that their car (figure 4.11) said that they were dull and old before their time, and expressing a preference to be an avatar for a prestige marque; meanwhile the latter acknowledged that their car (figure 4.15) may be denotative of speed, wealth and a brashness – almost as a latter-day Mr Toad (see 2.4) and seemingly illustrating the conflicting citizen/consumer dichotomy noted in 2.3 – yet denied such semiotics, protesting a more instrumental, tactile rationale. Despite a perceived lack of representationality on the part of these ICE-drivers’ cars, the semiotic power or nature of the motor car (see 2.3) is nonetheless underlined.

As noted by ICE-drivers #9 and #11, motoring budgets are an undoubted constraint upon what may be regarded or perceived as a truly ‘representational’ car, and yet the responses of ICE-drivers #2, #3, #4 and #10 illustrate how ‘authentic’ choices are nevertheless made, despite widespread purchase cost considerations noted in 6.3.2.2.

Similarly, the assertion that the car is more than just transport and may even subconsciously (see 3.2) constitute ‘the ultimate apparel’ (Nieuwenhuis, 2008) is prosaically borne out by the remarks of ICE-driver #5, who stated that they didn’t submit to the notion of an auto-identity and that they weren’t bothered about what their car said, statements seemingly supported by their car and its condition on the day of the interview, which was unclean and sporting damage inflicted “about five years ago” (see also figure 4.8). Similarly, the cars of ICE-drivers #1 and #7, along with their almost default mode of acquisition, suggest that they too might be accurate automotive avatars, even though the ICE-drivers themselves may not realise this.

These observations suggest not only that the notion of the car-as-representation can transcend budgetary constraints, but also that the views of those who regard the car

with indifference (Hewer and Brownlie, 2007) and consider it as mere transport, are in fact reflected in their cars, meaning that denials of a consumption of the car are countered by the automotive evidence connotative of how they actually consume it.

It is therefore possible that the semiotic nature of the car-as-representation may transcend a conscious consumption of the car, also effecting a sub/unconscious consumption of the car, meaning that every motorist has something to ‘say’ and, likewise, pedestrians and other motorists a text to ‘read’, which can constitute an affectual flow between car and ‘reader’. Following Wetherell (2012 – see 3.4.1) and Thrift (2008 – see 3.4.2.6), this would, in turn, point to an anticipated efficacy in the appropriation of postmodern and affectual/non-representational theory with regard here to the hermeneutics of automobility. How the notion of the car-as-representation may be manifest with regard to low carbon vehicles, especially given the apparently powerful nature of symbolism pertaining to new technology noted by Lane (2011 – see 2.3) is detailed in 5.5.3.

In assessing the consumption of the car, we have thus far considered the rationale of ICE-drivers’ car choice and how the socio-cultural consumption of the car can be manifest in the car as avatar. To complete a more holistic consumption of the car, we turn to the how the car can make owners feel.

6.5 Automotive affectus – moved by the car?

In 2.3, it was noted how, despite their profound impact, cars are regarded with indifference by some (Hewer & Brownlie, 2007), and this notion was illustrated by some ICE-drivers with regard to the car as a representation or avatar (see 6.4.4). In a similar vein, the former BMW designer Chris Bangle was quoted upon the difference between an automobile and a car (TED, 2007 – see 2.3), and it was posited that this alluded to the difference between a vehicle that transports us physically and one that perhaps moves us in other ways. Therefore, in appropriating the notions of affect and non-representational theory (see 3.4), we can assess how the ICE-drivers’ automobiles may actually be *cars* and if or how any feelings or experiences therein may predicate or preclude a low carbon automobility, as posited in figure 3.1/6.2. An analysis framework of this more affectual aspect of the consumption of the car is depicted in figure 6.1.

6.5.1 ICE-drivers' think/feel upon acquisition of their car

ICE-drivers were asked to recollect when they acquired their car and, in an attempt to ascertain initial reactions to their car, were asked as to what they thought and/or felt about their car when they first saw or got it.

Excitement was mentioned by some, whether this was at the prospect of acquiring a car after a period of time without one (#1), or the fact that their new car was superior to their previous one, although one ICE-driver suggested that *'males don't tend to do emotions, do they'* (#7), or the prospect of a new kind of vehicle – *'I was quite excited to have a minibus. I've never owned a minibus before'* – although this excitement was tempered with some nervousness regarding how it might be to pilot, and being *'immediately struck by just how differently it behaved, on the pedals and the handling, to a car'* (#3), or derived from prospect that *'it was the first time that the car had been used'* because *'it was brand spanking new when it was bought, so it kind of had that new car smell'* (#11). Similar feelings of excitement at *'the first time I've bought like pretty much a brand new car'* conflicted with feelings of disappointment for one ICE-driver upon discovering that *'the level of performance was a bit ... under par than I expected'* (#12).

A wide range of initial reactions pertaining to the appearance of their impending acquisition were noted by others, such as surprise at the colour not being quite as advertised and, although this was assuaged by the condition of the car, a previous experience meant that anxiety also prevailed in that *'I just want to drive it home from the garage and get it home ... once I've got that out of the way I'm ok then'* (#2). Another colourful reaction came from the ICE-driver whose first reaction to their car was *'it's red ...it looked fun'* although the car seemingly failed to elicit any particular feeling at the time (#9). There were no such issues for the ICE-driver whose car's lowered suspension made them think that it looked *'longer and sleeker and it changed the overall look of the car because it actually gave it a more sporty look'*, eliciting feelings of *'pride and pleasure'* because *'it looks good, you know it's a responsive vehicle'* (#4).

The size of their car was the source of reaction for the ICE-driver who said that their first thought about their car was *'big'* and noted that their financial commitment to a

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new car made them feel *'a bit anxious'* while also feeling *'excited that we'd kind of got something new'* and alluding to a *'new-toy mindset'* and the *'novelty of finding out about it and learning about it'* (#8). A predilection for small cars led one ICE-driver to note that their reaction to first seeing their car was that *'it looked nice ... my favourite car of all time was the Mini ... and it kind of reminded me of that'* and opining that *'you do get a bit of a different feeling, don't you'* with their new car (#10). A *'degree of novelty in having a different car'* was also noted by ICE-driver #5, adding that *'even though it wasn't new ... you always get that new car feeling'* even though their initial thought upon their new car was simply *'that kind of looks ok'*.

Such novelty was absent for one ICE-driver who admitted that, despite finding a car which *'ticked the boxes for me on that day'*, their buying a newer car of the same make and model to their existing one meant that it lacked *'that feeling that do have when you're driving a vehicle that's a little bit different to the one that you have been driving'*, and almost lamenting that *'we've spent ten thousand quid on one that's the same'* (#6).

The reactions of the ICE-drivers here suggest that any excitement of 'the new' pertains very much to the acquisition, rather than the age, of the car or vehicle in question; that said, with only three ICE-drivers interviewed having acquired their cars new, this finding may not necessarily be conclusive, and it is possible that a larger sample containing a greater number and/or proportion of new car owners/drivers may find differently. Nonetheless, such reactions prompt consideration with regard to Thrift's second definition of affect (see 3.4.1.2), in that an essential drive will have 'affected' the rationale for vehicle choice, the manifestation of which was described in 6.3.2, and also the degree of anticipation of the new car, that is, the ability to be affected as identified by Delueze and Guattari (2004; see 3.4.1). In turn, this innate drive would be responsible for any excitement felt by ICE-drivers' for their new acquisition, experienced in differing degrees and for differing reasons, despite ICE-driver #7's comments about males not 'doing' emotion, with such a claim perhaps explained by the different relationship that men have with cars (Sheller and Urry, 2000; Cresswell and Uteng, 2008).

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Another affectual aspect evoked here pertains to the synesthesia noted by Massumi (2002 – see 3.4.1), which is illustrated by the ‘new car smell’ mentioned by ICE-driver #11, transforming this olfactory effect into a sense of excitement, and even satisfaction and pride, wrought of a sense of newness.

It is interesting to consider Thrift’s third tenet on non-representational theory pertaining to established practices here. In part 3.4.2.3, mention was made on how this tenet related to a perpetuation lent by ingrained, extant practices, might apply to the transition from ICE to emergent low carbon technologies. Here, however, we can make reference to it in the contrast of the ‘new-toy mindset’ mentioned by ICE-driver #8 – a notion exacerbated for ICE-driver #3 by the new *type* of vehicle they had acquired – with the experience of ICE-driver #6 who almost lamented about having acquired a newer version of their previous car, as if they felt they were missing out on the experience of something new. Whether such a yearning for ‘new’ experiences within established technologies, practices or automobilities can be regarded as a wider opportunity for low carbon vehicle technologies remains to be seen, and is discussed later.

6.5.2 ICE-drivers’ think/feel upon sight of and/or approach to their car

So as to ascertain instinctive quotidian feelings concomitant of their cars, such as pride or relief or even ennui, ICE-drivers were asked to recollect their thoughts and emotions upon seeing or approaching their car. Two ICE-drivers responded with the words ‘*I’m glad it’s still there!*’, qualifying their responses with a feeling of ‘*mild relief*’ and contentment at the convenience in that being able to ‘*just get in and get home quickly, it is satisfying to be able to do that*’ (#1) and a similar reassurance in that ‘*it’s a pleasant sight to see a vehicle and know that you’re going home ... it’s saying to me ‘I’m here, I’ve waited all day, come on, let’s go home’’*’ (#6).

A less than positive reaction was ‘*I tend to think ‘oh God, I’ve got to drive somewhere’. Driving is a chore for me; it’s not something I do for enjoyment*’ (#3), while another negative reaction came from the ICE-driver who said that their first thought upon seeing or approaching their car was ‘*oh...*’ because ‘*I’ve had it a bit of a long time*’ adding that ‘*the kind of initial euphoria I had about ‘oh it’s so cheap to run’ is kind of getting outweighed now by feeling a little embarrassed about it*’ (#10). The converse

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was true for the ICE-driver who hesitantly ventured ‘...mine? Part of me?’ adding that they felt ‘proud ... I’ve worked for that and it’s mine, it’s part of me. It says who I am to some extent’ and observing that ‘because it’s mine, rather than a company car for example, you do feel closer in some way’ (#2).

Some ICE-drivers said that their car made them ‘smile’ with one saying that ‘we’ve got a relationship’ which invoked feelings of ‘pleasure’ (#4) with another suggesting ‘it’s the freedom factor, isn’t it?’ wrought by ‘the owning sense ... where she’s yours, you can do what you want with her, it’s not like passing a car and thinking ‘oh, if only’...’ (#9) and another saying that ‘I like getting in here, I like thinking ‘oh yes, I’m going to drive this now’ ...’ adding that they ‘feel lucky to have the chance to have a car like this’ (#12).

Conversely, some ICE-drivers said they thought and felt nothing upon seeing or approaching their car because ‘it’s just practical’ (#5) and the notion of ‘getting in that cocooned pod’ and feeling ‘isolated, really’ even prompted another ICE-driver – who wasn’t interviewed in their car – to try ‘picturing myself walking up to it, coming out of the house, things like that ... yeah, nothing really’ (#8), with another saying they ‘don’t really register it’ despite conceding noticing other similar models of car on the road and suggesting that ‘I don’t think I’ve got an emotional connection’ before admitting that ‘I did take photos of [their previous own car] before I got rid of it’ (#11). A sense of nothingness was also expressed by another ICE-driver who struggled to recall any thoughts or feelings of their car, saying ‘it all depends if I want to use [it] ... I can pass it quite easily in the street, ignore it’, though they acknowledged that ‘I recognise when it’s not there’ which perhaps goes some way to qualifying their observation that ‘it is a convenience’ (#7).

These responses give the first inkling that an affectus – the ability to be affected – of or for the car is variable to say the least, with a breadth of feelings expressed, whether positive, negative or even neutral, and it would seem that Thrift’s first definition of affect (3.4.1.1) pertaining to ‘flows’ (also see Stewart, 2007) between ICE-drivers and their cars is apposite here. This assertion is also supported by the observation of Lorimer (2008) that the bodies involved in the flow of affect need not necessarily be human (3.4.1.5), an assertion which underpins the rationale for this study. Such a flow

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is graphically illustrated by ICE-driver #6 in that their car ‘speaks’ to them at the end of a busy day, or in the sense of ownership that evoked a ‘smile’ for ICE-driver #9 and made ICE-driver #2 feel closer to their car than might otherwise be the case.

Indeed, a subconscious affectus is illustrated by ICE-driver #9 who stated in 6.4.4.1 how their car lacked ‘personality’ yet here referred to their car as ‘she’ and ‘her’, references that peppered the interview (see also 6.5.3 and 6.5.4); in addition, that this ICE-driver was female lends an interesting aspect to the gendering of the car noted in 2.3. Another interesting observation is the striking contrast between the responses of ICE-drivers #4 and #12, both enthusiasts whose sense of pleasure at the prospect of driving their cars was clear, and of ICE-driver #3 with their stated distaste for driving.

A lack of affectus exhibited by ICE-driver #11 could lie in the fact that, by sharing a car with their parents, the car they drive isn’t ‘theirs’ as such. This notion is seemingly underlined by the admission that, despite dismissing an automotive ‘connection’, they confessed to taking photographs of their previous ‘own’ car before parting with it and, in parallel with sentiments concomitant with ownership expressed by ICE-driver #2, hints at an affectus wrought by owning a car, in a car being ‘ours’, as part of a true feeling of ‘self’ (see 3.4.1.2).

As such, suggestions made regarding the notion of car ownership in the face of a transition to a low carbon automobility (Coffey and Thornley, 2012; Riversimple, 2014 – see 2.6.4) would point to a change in our relationship with the car, perhaps regarding it more of an automobile, an appliance, simply transport, rather than a car; *our* car.

ICE-driver #8 also appeared unaffected by their car, being unable to recall feeling anything upon seeing it, a sense perhaps wrought by their car’s cocooning nature. While similarly unaffected, that ICE-driver #7 bought their car cheaply from a relative could go some way to explain why this might be so, in that the almost default means of acquisition, in this case cheaply from relatives, meant it wasn’t necessarily a car they chose, or theirs to choose, rather a car they acquiesced to (however, we shall see that this doesn’t mean that it was necessarily an inauthentic acquisition). Whatever might lie behind the lack of affectus exhibited by these two ICE-drivers, it should be borne in mind that both these ICE-drivers didn’t come to work in their car on the day of their

interviews, which were subsequently conducted in their office environments, and it may well be that, following Sin (2003 – see 4.3.2), being unable to conduct the interviews in the source or site of potential affectus precluded such recollections.

That said, despite also being interviewed in an office environment, ICE-driver #4 had no problem with recalling the feelings invoked by their car, perhaps because of an affectus borne of the ‘relationship’ said to exist between them, something perhaps lacking in the quotidian automobilities of ICE-drivers #8 and #7. It would seem that while it is reasonable to expect the recollections sought here to be better evoked by interviewing ICE-drivers in their cars than by doing so elsewhere, the responses from ICE-drivers #4, and from ICE-drivers #7 and #8 would suggest that conducting interviews in situ is in fact crucial for assessing the mundane, quotidian automobilities of those less engaged with, or affected by, their cars than those for whom any affectus is more pronounced.

The responses above also suggest that the excitations widely invoked upon the acquisition of ICE-drivers’ cars, above, were indeed borne of a sense of newness – that is, a newness in a car’s acquisition, rather than in a car’s age or of it being new/used (see 6.5.1); indeed the latter, as we will see further in 6.5.3, 6.5.4 and 6.5.6.2, seemingly had little bearing upon the ICE-drivers’ regard for their cars – more than anything else, and can diminish over time, as admitted by ICE-driver #10, for example. While such an ‘excitement of the new’ may bode well for EV uptake, how any euphoria borne of any novelty in this technological shift will sustain remains to be seen.

6.5.3 ICE-drivers’ think/feel behind the wheel of their car

It is when cars are driven or piloted that the affectual and non-representational aspects of automobility can coalesce as a gestalt of the car, and where the ‘state of continual becoming’ noted by Thrift (2004 – see 3.4.1.1) is manifest as a response to prevailing traffic conditions, infrastructure, pedestrians and the affectual flows afforded (or otherwise) by the car. It is also where the vision and tactility noted by Massumi (2002 – see 3.4.1) and intrinsic, along with the sounds of a car and its surroundings, to the driving and piloting of a car, contributing to the affectual ‘synesthesia’ (*ibid.*) – that is, the transformation of sensory effects into other sensory effects – concomitant with automobility (see also 6.5.4) precipitating some of the feelings posited in figure 3.1/6.2

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that may impact upon low carbon automobility. To this end, ICE-drivers were asked to recollect what they think and/or feel while driving their car, prompting a variety of responses.

Some ICE-drivers reported feelings of being ‘in control’ though for different reasons such as empowerment, in that *‘I can drive [the car], and I’m in control of it’* and *‘I can drive the same as everybody else, I’ve as much right to be on this road as everybody else’* (#2), the need for awareness because *‘the roads nowadays, you have to concentrate that much’* with the resultant feeling of control because *‘you know what you’re doing and you know that ... you know her [the car’s] capabilities’* (#9), or a reassurance concomitant with the observation that *‘it’s a really reliable car ... it’s comfortable to drive’* (#11).

A feeling of detachment, echoing the observation of Graves-Brown (1997 – see 2.3) on how the car can act as an isolating ‘carapace’ was noted by two ICE-drivers, with one noting that *‘you’re not going to meet anybody else along the way, protected from the elements ... so you’re sort of taken out the environment in this little box that takes you from one place to another’* adding that it *‘reduces social interaction, I think’* (#7) and another, having mentioned earlier in the interview about feeling ‘cocooned’ in their car, adding that cars are *‘so much quieter now and cut off and isolated’* and suggesting that, to them, such isolation may be some kind of experiential trade-off in noting that their car’s *‘blandness is associated with its easiness to drive’* yet bemoaning that *‘when the weather’s horrific it’s alright, it’s nice, but the rest of the time, it’s pretty ... pretty grim’* (#8). The converse was true for another ICE-driver who was also a motorcyclist and who noted that, on a motorbike, *‘you’re much closer to the whole environment – you can hear it, you can smell it, you can feel it’* and that the nature of their sports car was *‘very much closer to riding a motorbike’* than an ordinary car because *‘you’re not in a totally protective cocoon’* and deriving an overall feeling of ‘pride’ from their car and effusing about its dynamic capabilities, saying *‘I know that car will go around corners far faster than I ever will’* (#4).

A more sedate view was taken by the ICE-driver who professed feelings of familiarity while driving their car, in that *‘it’s just kind of a comfortable place, it’s somewhere I’m used to’* (#5), a view contrasting with another ICE-driver who said they felt *‘glad to be*

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there [behind the wheel]’ adding that the ‘focussed’ nature of their car meant that ‘*it’s really annoying in traffic*’ but that at ‘*other times, when you’re on it, and you’re really enjoying it, it’s really good*’ (#12). A more prosaic, yet still affirmative, view was given by the ICE-driver who said that ‘*I’m positive, I’m quite happy*’ behind the wheel, a feeling wrought by their car ‘*giving me the freedom to get out and about and go places*’ including as part of their work duties, adding that ‘*the day goes much quicker if you’re out and about doing stuff*’ (#6).

Other ICE-drivers were less positive about their feelings behind the wheel, noting feelings of stress, one ironically as a result of the convenience afforded by the car in that ‘*I’m never early to anything ... a lot of the time, that is associated with me being late when I’m in my car*’ because ‘*when I’m in my car, I know I can just jump in and go and I don’t allow for me being ... faffing-around time*’ (#1) and another because of the size and nature of their car meaning that ‘*it’s a stressful car to drive*’ and noticing that ‘*people are more aggressive when you’re in a smaller car*’ meaning that ‘*I’m more anxious when I drive it nowadays*’ (#10). Another less-than-positive response about feelings for their vehicle simply said that they usually felt ‘*bored, and sad that I have to be driving! I don’t like driving*’ (#3).

Thrift’s third tenet of non-representational theory, pertaining to extant practices (see 3.4.2.3) again applies here, in that familiar practices can predicate or inform ICE-drivers’ quotidian automobilities, as illustrated in the responses of ICE-drivers #5 and #9 pertaining to their own individual cars, and that of #1 in the convenience that the car provides and which has perhaps been taken for granted, alluding to a conditioning to the car.

Though also applicable to the previous two sections, the synesthetic nature of Spinoza’s *affectio*, noted by Massumi (2002 – see 3.4.1) is more profoundly manifest here, as the sensations invoked while driving or piloting a car is transformed into other senses, or not, as the case may be.

An intriguing manifestation of Massumi’s affectual synesthesia is one not necessarily derived from one’s own car, but instead from other’s cars, a notion suggested from the assertion of ICE-driver #10 that other drivers are more aggressive towards smaller cars,

leading to their anxiety while driving; whether such aggression on the part of others is a real on the part of others or perceived because of the nature of their car, here it is nonetheless felt. Such a car-driver or driver-car ‘flow’ is an intriguing proposition, and one which foments the affectus effected not only by our own cars, but also by other’s cars and is perhaps more commonly manifest in how we may routinely judge others on the style/colour/condition/manner of their cars. In this case, such felt aggression, which is perhaps familiar to cyclists, may have ramifications should a future EV fleet be to some extent composed of electric quadricycles, such as the Renault Twizy, suitable for an urban-based electric mobility.

In noting that the car isn’t a suit of clothes, former BMW design chief Chris Bangle seemed to dismiss the notion of car as representation, suggesting instead that your car is as how you feel, an expansion of yourself (2.3). While his dismissal of the representational aspects of the car is perhaps incongruous, his idea that the car takes our emotions and multiplies them does allude to the notion of affect and points to the need to look beyond the representational, even if he may have inverted Pile’s ‘layer-cake’ (3.4.2) somewhat and, in again pertaining to Thrift’s first definition of affect regarding flows, hints at the difference that Bangle notes between an automobile and a car.

6.5.4 Sound and tactility

A move to a low carbon automobility, especially an EV automobility, will necessarily mean that the nature of the car, that is what cars feel like to drive and also what they sound like, will necessarily change (from my own experience of driving EVs, I can also testify to this being the case) and may present a barrier to low carbon vehicle uptake (see figure 3.1/6.2). To this end, ICE-drivers were asked if they bore consideration not only of the noises emanating from their cars but also to the feeling of the controls of their cars – steering, brakes, gearchange – and what, if anything, they particularly noticed.

All ICE-drivers said they thought about the noises from their cars. Engine noise is almost a ‘given’ in that most of the ICE-drivers referred to it in their answers, with most specifically citing it as a prompt to change gear, saying things like *‘I do listen to the engine, but only for practical driving reasons ... in terms of gearchanges’* (#5) and another observing *‘I think it’s because I’m a relatively new driver, I still listen to revs,*

*even though she's got a rev-meter' (#9). Two ICE-drivers (#3 and #10) thought their vehicles were excessively noisy with one of them adding that 'I know how important changing gear is for the fuel efficiency of your car and, you know, because it's quite a noisy car, there's no getting that wrong ... I mean, I've got a rev counter, but I don't need a rev counter' (#10), while another ICE-driver seemingly revelled in the noise from their engine, saying 'I'm always listening to the engine ... it's all the mechanical noises that I listen for ... it adds something to the experience of driving' (#12). Does this observation suggest that EVs will necessarily lack 'something' in terms of providing a driving experience *per se*, or simply provide a driving experience that is different (see 2.6.3)?*

Road noise was mentioned by several ICE-drivers, with one ICE-driver noting that one's awareness of this noise is heightened *'when going from one surface to another in your vehicle, you can hear the tyres making a different noise'* (#6). Some ICE-drivers mentioned squeaks and rattles with one suggesting that *'every car's got its squeaks from the air vents and stuff'* (#1) and another admitting that their car *'squeaks a bit now, it's getting old'* (#10). Others admitted that they didn't particularly notice any noises in their cars, only that *'it's quite a quiet car compared to my old vehicle'* (#11), while another commented on the overall quietness of their car, observing that *'it's almost the lack of noises that you notice ... it's not silent, it's quiet'* (#8) and another saying that they only *'notice noises if they're out of the ordinary'* (#2). In fact, quite a few of the ICE-drivers said that they noticed such non-specific 'alien' or 'out-of-the-ordinary' noises whereby *'you can tell if the engine's not quite running right'* (#5), with one ICE-driver suggesting that picking up on such noises could be a corollary of being *'very tuned into what the vehicle should be sounding like'* (#6) whether by dint of *'recognising what is the norm for me and then so you can kind of ... a baseline in case anything does happen'* (#11) or due to *'years of having older cars and thinking 'oh, what's that clunk?''* (#6). These observations support the notion that *'noises are very important because they can tell you whether [the car's] running alright'* (#7) and that *'noise is one of the important diagnostics for a vehicle'* (#3). Contrasting opinion on noise were noted by the ICE-driver who said that, when it came to noise in their car, they were *'not really bothered'* (#1), and another who noted the 'sports-tuned exhaust' of their car provided *'a very pleasurable note'* before adding that *'when you've got the roof down, you can hear everything'* (#4).

Response to whether ICE-drivers noticed anything about the feeling of the controls of their cars – the gearchange, steering, or brakes – was more mixed, with only some ICE-drivers saying that they noticed anything. The gearchange came in for particular attention, with one ICE-driver admitting that *‘I do pay particular notice to the gearchange – I think it’s quite a nice feeling, the changing ... moving up and down the gears’* (#7) and another saying that *‘I do like to try and keep it in its power band’* while professing an *‘awareness of changing the gears properly and not over-revving it or letting it struggle and strain’* (#8). The two ICE-drivers who owned the more overtly sporting cars amongst the ICE-drivers were quite enthusiastic about their cars’ tactility, saying that they *‘definitely, absolutely’* thought about their car’s controls and effusing about the steering which was *‘very direct, very responsive’*, gearchanges that were *‘short changes and very smooth’* and brakes which were *‘very powerful to stop’* adding that *‘it’s a car you drive’* (#4) and stressing the importance of the tactility of the car because they felt that *‘if you get more from the outputs of the car, you can drive it better’* and that, for them, *‘the weight of the steering is quite good in this car and the sort of paddles ... the gearshift paddles are good, makes you feel like an F1 driver, so that’s good’* (#12).

Less positive comments regarding the controls of their car came from the ICE-driver who described their car as *‘clunky as hell’* and that *‘you find stirring sometimes to find a gear’* adding that while *‘the steering’s very good ... because they’ve got such narrow tyres, the handling’s not very good’* which, coupled with the fact that *‘the ABS [anti-lock braking system] tends to kick in quick’* means that *‘you really have to think about driving the car’* (#10). The prospect of driving a new type of vehicle led one ICE-driver to confess that they were initially *‘nervous having never really bought a van or minibus before’* and that they were *‘immediately struck by just how differently it behaved, on the pedals and the handling, to a car’* and that they *‘do think about the feeling of the gearchanges’* (#3).

Several of ICE-drivers said that they didn’t think about the feelings of the controls of their cars, with one ICE-driver suggesting that driving their car is *‘just habit I think, really’* (#2) or that *‘in terms of the gears, I don’t really think about it ... it’s pretty much a point-and-go car’* (#5). Familiarity was mentioned by one ICE-driver, in that *‘it’s a*

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car I've been driving for a long time, so I should know what it feel should feel like ... you know if things aren't right' (#6). This sentiment was echoed by the ICE-driver who, when asked whether they thought about the controls of their car, said that 'I wouldn't say consciously, but you know when it's wrong ... when you're used to a car, it's all subconscious' (#9) and with another who said that 'I don't really think about it when I'm in my car, only when I'm driving someone else's car and I think 'I'd much prefer to be driving mine'' though they also admitted that 'after a while it enters your subconscious ... like most people, I drive in automatic mode so I don't think about how it operates so much' (#1).

We can see from responses to aural and physical interaction in/with cars how Thrift's definitions of affect become increasingly relevant. For example, the flows (3.4.1.1) concomitant with a noise-wrought affectus is demonstrated by ICE-driver #12 for whom engine noise added to their experience of driving and, at the other end of the enthusiast spectrum, ICE-driver #1 who expressed no concern over the noises from their car, responses which respectively hint at both a car-driver and driver-car *affectio* and also the desirous essences (3.4.1.2) invoking such flows. The noises made by our cars can prompt drivers to act in certain ways (3.4.1.4), such as to change gear, or an instinctive awakening to something somehow 'different' from the behaviours drivers are subconsciously accustomed or conditioned to from their cars (3.4.1.3) indicating something out of the ordinary or 'wrong'.

Such subconscious (3.2) conditioning or 'manifold psychology' is illustrated in reactions to the controls of our cars too. Consider the 'automatic driving mode' entered into by several ICE-drivers, such as #1 who noticed differences when driving a car other than their own, or the perceived 'point-and-go' nature of their car described by ICE-driver #5 hinting at an ingrained conditioning to the motor car as we know it, or the very different experience of driving a minibus encountered by ICE-driver #3.

In addition, the observations made here readily lend themselves to Thrift's fourth tenet of non-representational theory (3.4.2.4), whereupon it is through our physiological senses that our cars 'answer back'. That cars can 'reply' in such a way relates to Massumi's affectual synesthesia, not only to practical ends such as effective gear-changing or highlighting potential automotive maladies noted by many ICE-drivers, but

also in the sporting pretensions, such as the ‘direct steering’ observed by ICE-driver #4, or the way that the gearshift paddles (increasingly prevalent in cars with sporting pretensions these days) made ICE-driver #12 feel like a racing driver.

It is also interesting to note that even those ICE-drivers who weren’t interviewed in their cars were still able to comment upon matters of sound and tactility, in contrast to commenting on how their car made them feel (6.5.2) beyond a disconnection or isolation (6.5.3). Their still being able to recall physical or tactile sensations of manipulating or piloting their cars, more so than some of those interviewed in their cars, illustrates the importance of interviewing ICE-drivers in situ in the pursuit of invoking the non-representational and affectual aspects of the automobile since, and following Thrift’s first definition of affect (3.4.1.1) any automotive affectus is the result of flows between ourselves and our cars, and the car being the space in which affectio takes place, a space which will necessarily change (aurally if nothing else) with a move to a low carbon automobility.

6.5.5 Personal effects

ICE-drivers were asked about any modifications or personalisation they had done to their car, creating an individual ‘space’ (see figure 3.1/6.2), and to the rationale behind them. Externally, all of the ICE-drivers cars were largely as standard, with only one of the ICE-drivers having done anything to the exterior of their car by, having long aspired to it, fitting a private number plate to their car (which, in the interests of anonymity, was not photographed), and admitting that *‘I guess it’s a bit show-offy’* but believing that *‘it’s almost like ‘yes, I’ve made it’*” (#2) while another, whose car had actually been modified by a previous owner who had lowered the suspension and fitted alloy wheels, had tried to further augment its handling characteristics by fitting *‘a cross support that goes across the top of the engine just to hold [the car] flatter’* though added *‘I don’t know if it has an effect at all’* (#4).

Mechanical modifications had also been carried out by the other sporting-car-owning ICE-driver who said that their car now had *‘a different ECU [electronic control unit for engine management] on it ... it’s got a full intake system, full exhaust ... high pressure fuel pump’* so as to improve the performance of their car even further, all of which

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prompted their only interior modification, which was ‘*a boost gauge, so I don’t blow the turbo up*’ (#12 – figure 6.11).



Figure 6.11 Turbo boost gauge fitted to ICE-driver #12's Audi S3



Figure 6.12 National Trust sticker affixed to the windscreen of ICE-driver #8's Ford Mondeo



Figure 6.13 and 6.14 Stickers affixed to the rear window and windscreen respectively of ICE-driver #7's Ford Escort

Note: tax disk removed for data protection reasons

Insofar as the interior of their cars was concerned, other ICE-drivers had mostly kept the personalisation of their cars to a minimum with some (#1, #5, #6 and #9) having done nothing to personalise their ‘space’ at all. Of those that had, others had limited themselves to ‘*floor mats ... ordinary ones I got from Halfords ... I think one day I’ll treat myself [to] Citroën mats, you can get them on eBay for £20*’ (#10), or a National Trust window sticker and ‘*the occasional air freshener my wife puts in [a Manchester*

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City Football Club air freshener in this case]’ (#8) or ‘*a sticker on the back that says WaterAid*’ (#7 – figure 6.13).

A variation from a more conventional air freshener was the only addition made by another ICE-driver whose sun-visor was adorned with a sprig of ‘*lavender ... that was more my wife. Not that I mind at all, but it was definitely her decision*’ (#3 – figure 6.15) while another had ‘*improved the environment*’ of their car by fitting ‘*a wind deflector ... behind the head that assists when you’re driving along*’ (#4). Other, seemingly inconsequential, in-car accessories included a dashboard-mounted flower of apparently uncertain provenance, in that ‘*that’s not mine ... I’m assuming it was a gift or something*’ (#11) and ‘*a couple of material dogs on the back [parcel shelf], but they’ve been with me in every car. But if they were ever thrown away, I wouldn’t miss them*’ (#2 – figure 6.16).



**Figure 6.15 Lavender ‘air freshener’
fitted to ICE-driver #3’s Ford
Transit Minibus**



**Figure 6.16 ‘Ever-present’ cloth dogs
inside ICE-driver #2’s Mazda 3**

Adorning or accessorising one’s car provides a real opportunity to make a mobile statement, to make our mark (or even marque!), to make a car *ours*, although few of the ICE-drivers interviewed had taken the opportunity to do so. While what drivers do to their cars is obviously a representational action, *how* or *why* they do it – where this action has come from – can be regarded as a manifestation of the affectual or non-representational.

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For example, the application of an in-car freshener can be regarded as a representational act, as well as a practical one, as with the football team-liveried freshener in the car of ICE-driver #8. However, acting as a contrast to the somewhat chemical nature of more conventional in-car fresheners, the sprig of lavender acting as an in-car (or, in this case, an in-minibus) air freshener in ICE-driver #3's vehicle can be said to pertain to Thrift's second definition of affect (3.4.1.2) regarding essence, in that using a natural, organic alternative to conventional 'processed' air-fresheners is perhaps a more authentic or fitting solution for them to pursue.

We can all judge as to the nature or interests of car owners from any window stickers, such as the charitable nature of those in the cars of ICE-drivers #7 and #8. Again, while perhaps representational of their interests, from where such interests arose pertains to Thrift's second definition of affect.

The synesthetic nature of affect grounds the sense of pride ICE-driver #2 derived from the fitting of a private number plate to their car, and it is interesting to consider whether/how other motorists or pedestrians might react to this as a corollary of the affectual 'flows' alluded to in Thrift's first definition of affect (3.4.1.1), whether in terms of respect, disdain or even nothing.

A key ingredient in the quotidian use of the car is in-car entertainment. Whether drivers listen to music radio, talk radio or their own cassettes/CDs/MP3s, audio entertainment is a key part of how car journeys are experienced, if not the car *per se*, but can have an 'affect' upon how we 'present our representations'. Most ICE-drivers said they listened to the radio in their cars, though a minority said that they didn't, preferring '*whatever CDs I've got. Generally not radio, because it's rubbish*' (#1) or because '*I like to listen to music that I like to listen to. It's my little area*' (#9) while another ICE-driver said that they rarely listened to music in their car because '*I much prefer listening to the engine and the sort of noises from the car*' (#12).

While those who listened to the radio while driving listened to a variety of stations, some said what they listened to depended on the time of day (#2 and #11) or who was in the car with them (#3 and #6). Some of the ICE-drivers admitted that what they listened to had an effect on their driving, suggesting that '*if you listen to Radio 1, foot*

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down, flying ... Classic FM, calming, soothing’ (#7) or admitting that ‘upbeat songs will maybe make me ... if there’s a quiet roundabout, I might try and make it more involving, so to speak, whereas if I’m listening to something pretty chilled ... you kind of roll along and think ‘what’s the rush?’ (#8) and that ‘if I’m particularly stressed behind the wheel, I do use Classic FM to try and calm myself down’ while a ‘good fast song, it does tend ... you look down at your speedo and think ‘bloody hell...’ (#10), a sentiment echoed in the observation that ‘I’m probably taking less care if I’ve got my music on’ (#1).

A similar admission came from the driver who said that *‘I know ... if I’m playing fast paced thumping music that my senses will be quickened’ (#4)* while another posited that one thing *‘a lot of people might not perceive is that fast classical music can have the same effect as fast dance music’ (#3)*. Others perhaps erred towards acknowledging the effect of music upon driving while expressing some uncertainty, observing that *‘I think it can do, but it doesn’t typically’ (#6)* and that *‘it shouldn’t do, it probably does’ (#9)*. A similar sentiment was suggested by the ICE-driver who said *‘no, not on me, but I can understand how like if something’s a bit louder or has more beats to it, you would drive faster’ (#11)*, while another said that while they *‘have experienced in the past that certain kinds of music can make you drive faster’* they now listened *‘usually to one of the talk stations, Radio 4 or 5’* and so *‘I don’t think that what I do [listen to] does particularly’ (#5)*. A further ICE-driver who rarely listened to music in their car admitted that *‘the music of the engine definitely would’* have an impact on their driving because *‘when you’re getting good feedback from the engine and it’s pulling strong and stuff ... that’s a good feeling’ (#12)*.

The audio habits of ICE-drivers show how Thrift’s second (3.4.2.2), and perhaps fifth (3.4.2.5), tenets of non-representation theory, pertaining to ‘continuous encounter’ and various ‘registers of sensation’ respectively, are driven by his first definition of affect noting embodied practices manifest as an outer lining (3.4.1.1), and again illustrate Massumi’s affectual synesthesia (3.4.1) in transforming the effect of sound into another into something else, exemplified here by the calming effect of classical music and an urgency induced by faster, ‘rockier’ music, exemplified by the reaction of ICE-driver #10 upon reading their speedometer or the intensified driving noted by ICE-drivers #8 and #4.

6.5.6 An overarching automotive affectus

The previous sections have enquired as to the reactions and feelings of the ICE-drivers upon acquiring their car, seeing their car, hearing their car, piloting their car and feeling their car, with a means to assess how the car is experienced and felt – an automotive affectus, if you will – and considered how these aspects pertain to Thrift's notions of affect and of non-representational theory. However, affect isn't a mechanistic thought process to be deconstructed, rather it is an essence of experience and expression conducted of and through the milieu, and so it may seem necessarily counterintuitive to construct an 'affectus-by-proxy' in such a manner. Nonetheless, by appropriating the notion of Gestalt, whereby a whole is greater than the sum of individual parts, appropriating affect as a way to effect a Gestalt of the car (see 2.3) is entirely in keeping with trying to assess what might, in turn, effect an automotive affectus.

6.5.6.1 More than a feeling?

In an effort to distil an overarching affectus, the ICE-drivers were initially asked, having considered the aspects detailed above, how their car made them feel overall. The majority were positive in their responses, with some saying that their car made them feel 'happy' in that *'I get a thrill from driving it because of the performance. I like the fact that it still goes quick well, I can carry people around and it's fairly practical ... I feel like I've found the car for me'* (#12) or in they felt *'in control'* (#9) or because *'I can please myself ... we're going back to the freedom and flexibility, it allows me to do so much more in my life than when I haven't got a car'* (#6). The latter sentiments were shared by the ICE-drivers who said that freedoms afforded by the car meant that *'it makes me feel empowered'* (#1) and *'it makes me feel that I'm the same as everybody else'* (#2). One ICE-driver said that the car they drove *'makes me feel safe'* before adding *'I suppose there is a bit of pride in having access and use to a reliable and attractive car'* (#11), while another said that they *'felt at one with the car because it's ... an extension of one's personality and it does everything I wanted'* (#4).

An interesting observation came from the ICE-driver who said regarding feelings towards their car that *'before today, not massive amounts really'* but the interview had made them realise how much they *'relied on [the car] and it was there and you need it ... you don't really appreciate it much as you should, you take it for granted'* (#8), an

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observation that hints at a subconscious (see 3.2) conditioning to the car. Such prosaic feelings regarding the car still prevailed among other ICE-drivers in that, overall, their vehicles didn't elicit any feelings at all. One ICE-driver said that *'I do tend to see it as a tool ... that gets you from one place to the other'* (#7), a sentiment echoed by another who admitted *'yes, it gives me a degree of freedom, but ... it's a good tool to have, but it's just a tool at the end of the day'* (#5) while another asked *'it's a big lump of metal and plastic – why would it make me feel anything?'* (#3). Only one ICE-driver expressed negative feelings about their car, saying that while *'I don't want to be too negative about it. It does make you feel a bit tired sometimes'* before adding in hushed tones *'sometimes a little bit embarrassed'* (#10).

When we consider constant affectual 'flows', the 'continual becoming' of affect (3.4.1.1), and the continuous renewal intrinsic to non-representationality (3.4.2.5), such a distillation of affectus may seem something of a blunt instrument. That said, it can reveal what ICE-drivers might regard as the essence or nature of their car which, in turn, will be a result of their own essence, or drive (3.4.1.2), as it is for all of us (2.3) and can point to an ability to be affected by their car or the motor car in general. From the responses above, it is clear that, following Deleuze and Guattari (3.4.1), this affectus is more intense on the part of the more auto-enthusiastic ICE-drivers #4 and #12, in that their choice of cars hints at an authenticity, feeling respectively 'at one' with their car and that they drive 'the car for them'. However, such an authenticity of car choice is also apparent at the other end on the auto-enthusiasm spectrum, with ICE-drivers #5 and #7 regarding their cars as mere 'tools', an attitude reflected in the choice (or otherwise) and regard of their cars.

The blunt nature of the question is reflected in the answers that some of the other ICE-drivers gave, referring to feelings of control, empowerment and freedom. How much these notions emanate from the ICE-drivers' individual cars themselves is a moot point, as they are all characteristics which can equally be applied to the motor car in general and what it affords us, and so the degree to which these feelings are experienced will derive from the ICE-drivers' own essence or nature. Such generic automotive-induced feelings and the indifference exhibited by ICE-drivers #5 and #7 might explain, or even be a symptom of, the sociological neglect of the motor car noted in 2.2. That society has become so adjusted to the car, as noted by Kronenberg (2007), perhaps as a result

of the car's maturity (Bayley, 1996), is illustrated by ICE-driver #8 who admitted to unthinkingly taking their car for granted until the interview.

6.5.6.2 Auto-perfections

To distil these responses even further, ICE-drivers were also asked whether, overall, their car made them feel 'joy', 'sadness' or even 'nothing'. This question was posed to consider the 11th Proposition of Part 3 of Spinoza's *Ethics*, Of the Origin and Nature of the Affects, which posits affect as

“the idea of anything that increases or diminishes, aids or restrains, our body's power of acting, increases or diminishes, aids or restrains, our mind's power of thinking” (Spinoza 1996 [1677]: 76)

with the accompanying Scholium explaining that

“the mind can undergo great changes and pass now to a greater, now to a lesser perfection. These passions, indeed, explain to us the affects of joy and sadness. By *joy*, therefore, I shall understand what follows that *passion as by which the mind passes to a greater perfection*. And by *sadness*, that *passion by which it passes to a lesser perfection*” (ibid: 76-77 – original emphasis).

It was hoped that this question might provide a clear and discrete idea as to the overarching affect that their cars exerted upon the ICE-drivers. Ultimately, some responses were less than straightforward (which, given the nature of affect, is perhaps as it should be), such as the ICE-driver who said that ‘*it's not sadness ... it's not nothing but I think it's some sort of very mild joy*’ resultant of their car's utility, namely ‘*the convenience of it, the practicality of it*’ (#7). Others said ‘between joy and nothing’, citing convenience in that ‘*it just gives me another choice of getting around*’ (#1) or noting a ‘*contentment ... it's there and it does its job and ... it's not an old banger*’ (#8), while the ICE-driver who shared their car with their parents said that their ‘between joy or nothing’ response was because ‘*it's an A to B type thing, it's not a reflection of me*’ adding that ‘*maybe if I owned the car or ... it might be different*’ (#11); that this ICE-driver has admitted to feeling little towards cars, yet taking photographs

of their previous, own car before giving it up (6.5.2), suggests that such feelings would indeed be different.

Others were more definitive in their answers saying that they derived a feeling of ‘joy’ from their cars, whether by dint of ‘*the independence*’ afforded by their car (#2) and ‘*the sense of freedom it gives you*’ (#9) or because ‘*I do a lot of things, so it’s nice that ... the things that I do in my car tend to be nice things. I’m not someone who tidies the house at the weekend, we go out and ... from my personal opinion, I think there’s more to life than staying in your house*’ (#6).

The ICE-drivers who owned the more sporting cars offered more a car-centric rationale for their feelings of ‘joy’ because of ‘*how engaging it is to drive and, you know, the performance of it and ... it feels good*’ (#12) or because of a previously mentioned feeling of being ‘*at one with the car*’ (#4). This response by ICE-driver #4 was augmented by an interesting observation concerning the appearance of their car, in some part due to modification by a previous owner, namely that ‘*I admit that I bought it because of its overall look and I haven’t changed that, and if I lost that, for whatever reason, I’d be quite sad because I don’t think I could replicate it just off the shelf*’, adding that ‘*you could re-buy the alloys, you could lower the suspension on a vehicle, all that type of stuff, but – this sounds really daft – you could do all that but it doesn’t mean that the car feels the same because a car develops its own characteristics, and that’s probably because of its history*’ (#4). Far from sounding ‘really daft’, this observation is extremely telling and rather captures the essence, the spirit, the nature of a car – a *particular* car, modified in a particular moment, as opposed to the motor car in general – and provides an almost quintessential or literal automotive affectus, and illustrates how affect is a two-way process or ‘flow’ between ourselves and other people/objects.

By contrast, some ICE-drivers said their car made them feel ‘nothing’ because of a previously elicited opinion of their vehicle being ‘*a big lump of metal and plastic*’ (#3), or for the reason that ‘*it’s just a practical device rather than anything to be ... joyful over*’ (#5) or, in an almost appropriate ‘checks and balances’ mien, ‘*with the exception of the things that annoy me about it, that make me tired, it doesn’t make me feel any way, it doesn’t elicit any emotion, other than negatives ones*’ (#10).

The ultimate expressions of ‘joy’ noted here show ICE-drivers #4 and #12 display much ability to be affected and, from their responses earlier in this chapter, have clearly connected with their vehicles, with ICE-driver #4 possessing quite an insight as to the essence or nature of their car.

It is interesting to note that, despite the sentiments expressed by ICE-drivers #3, #5 and #10, no-one said that their car, overall, invoked a feeling of ‘sadness’. However, it is also notable that any feelings of ‘joy’ were perhaps derived from the affordances of the motor car in general than ICE-drivers’ own cars in particular, with any such feelings a corollary of the convenience and utility that the car brings. Such sources of ‘joy’ then, which can be said to be grounded by feelings of freedom, are key when it comes to an ‘affect’ invoked by the car, and could have ramifications for the electric car, as – at the moment – EVs are compromised by the range and charging limitations of current battery technology. If what a car ‘is’, how it is regarded, is borne of what it primarily permits, does this mean that EVs necessarily lead to a ‘lesser perfection’ in terms of automobility, despite any innate benefits they possess in terms of running costs, environmental impact and driving experience?

6.6 EV le différence? EVs as perceived and experienced

In a transition from ICE to EV, will the essence, the nature, of the motor car change? If so, then the nature of automobility will inevitably change and, following Spinoza, the ‘affect’ (see 3.4.1) of the motor car – *ergo* the way we ‘feel’ and/or regard the motor car – will change also. Therefore it is pertinent to consider the experiences of those who have driven electric cars to ascertain just how different EVs are to drive, to experience and to feel. To this end, participants of the CABLED low carbon vehicle trial were asked about their experiences of driving the Tata Indica EV (see 4.3.4.4) and about how driving an electric car made them feel. In addition, ICE-drivers were asked what they perceived the differences between EVs and more conventional ICE vehicles to be, with these perceptions compared to the experience of EV-drivers, and also if they would consider an electric car. Together, such enquiries of both ICE and EV drivers address the ‘barrier or lever’ question posited with regard to both existing and future low carbon automobilities in figure 3.1/6.2.

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The question of what a low carbon vehicle may be perceived ‘to be’ was addressed in section 5.4, but how might it be perceived ‘to feel’? To address this question, ICE-drivers were asked as to whether they thought that their experience of driving would be different in an electric car, which is perhaps the most immediate alternative low carbon technology available, and how such experience might compare to their existing car. The questions were initially asked to inquire about perceptions of EVs, but the responses therein can also augment the responses provided regarding EV knowledges (see 5.4.3).

It is pertinent to compare the perceptions of driving a low carbon vehicle with the experiences of those who have experienced electric vehicles, so as to ascertain the accuracy of any perceptions and so suggest or infer if these perceptions would be a barrier to an uptake of low carbon vehicles. As such, to complement these responses, participants of the CABLED trial were asked as to their opinions of the experience of, and feelings associated with, driving an electric car and as to how it compared to a conventional car.

Before embarking upon this analysis, it should be pointed out that two of the ICE-drivers (#1 and #6) had had previous experience of EVs, having driven one of Coventry City Council’s Smart ED (Electric Drive) pool cars, while another (#10) said they had driven an electric Ford Focus while a student at university.

6.6.1 An electrifying experience?

The majority of ICE-drivers thought that their driving experiences would be different in an electric car, with most positing a lack of noise as the main difference, including one who suggested that *‘I believe that ... some manufacturers are actually putting noise into the vehicles to make people feel happy about it’* (#7). This perception of EV quietness was borne out to an extent by the experience of the EV-drivers, with one driver observing that they initially found *‘it was quite spooky and eerie because you turn the key and it’s on, but you don’t realise that it’s on’* (EV_#3) while another felt that *‘the quietness of it was quite disturbing at first until you got used to that’* (EV_#6), all of which alludes to the way we have perhaps become conditioned to the car (2.3) in terms of, in this instance, what a car ‘should’ sound like.

It should be noted that driving an EV isn't a totally silent experience, and while such notions of silence were given a positive spin by the driver who described '*a remarkable sort of serenity*' that comes with driving an EV (EV_#2), another spoke of '*high-frequency noise ... an electric noise, motor whine ... which isn't pleasing to my ear*' (EV_#1). One driver observed that a lack of noise meant that '*you do have to be more aware that the car doesn't make a sound when you're pulling off*', while suggesting that concerns over the lack of noise may be overplayed in that '*you'd be surprised as to how quiet normal cars are as well ... what you do hear is the tyres on the tarmac regardless, so that argument isn't as strong as what people make it out to be*' (EV_#3).

Another perceived characteristic was '*smoothness ... that I've heard about, just the way they deliver the power as soon as you accelerate, I think, quite smooth and linear*' (#8), with such linearity perhaps inferred by the ICE-driver who said '*I know they can be driven differently because of ... they don't suffer quite the same from inefficiencies, you know fast acceleration, things like that*' before admitting '*but I don't know enough about then really to say much more*' (#5).

One of the other potential differences in performance highlighted by a couple of the ICE-drivers was a lack of top-end performance where, from experience, one ICE-driver claimed that '*it does feel a little bit embarrassing when you've got someone behind you and you're trying to accelerate as fast as you can and not really getting anywhere*' (#1), a perception also alluded to by another who had also previously experienced an EV, saying that '*I tend to think that it wouldn't have the same power, but that might be a false perception*' (#6), observations which may stem from the nature of the technology available on early Smart EDs (see Daimler, 2009) utilised by Coventry City Council.

These latter performance concerns aside, the reality is little different from these perceptions, with responses from the EV-drivers suggesting that the driving experience of an EV was actually much more positive than that of an ICE. Smoothness was mentioned by a couple of the drivers, as was the instant response and nippiness – a corollary of the electric car being able to deliver maximum torque, or pull, from standstill – resulting in a '*brisk performance around town*' (EV_#2), and leading one driver to describe their electric vehicle as '*much more positive, it was responsive ...*

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[and] ... *quick off the mark*' (EV_#3) compared to an ICE. This view was concurred by another who said that driving an EV was '*a much better experience*' and noting that the engine in their own everyday ICE car was '*supposed to be a very smooth, responsive engine, but it's rubbish after the electric engine [sic]*' (EV_#4). The EV drivetrain attributes of smoothness and responsiveness (2.6.3) noted here allude to electromobility being fun (see also Cenex, 2013), although such a notion wasn't explicitly expressed, perhaps as a result of the specific vehicle driven (see below, and 4.3.4.4).

The need for forward journey planning was posited by some of the ICE-drivers, in that '*you'd have to be more aware of ... call it fuel issues ... a bit more organised because the infrastructure isn't really there as such*' (#3) with another saying that '*I'd also have to plan my journeys around 'where am I going to stop to top this up with electricity'*' (#2) while another suggesting that, even with a wider recharging infrastructure '*it's not instant, is it? If you run out of diesel, you fill it up and away you go again, and if you need to top up an electric vehicle, it isn't a pull in, pay ... it's a 'right what are we going to do now then' unless it's a fast charge of some sort that's developed, but we're not there yet are we*' (#6).

Such issues of range and infrastructure are commonly voiced as a barriers to EV uptake (see 2.6.3), and one EV-driver posited an interesting observation claiming that, in comparison to an ICE car, the Indica EV was '*like having a petrol car with a 1-gallon tank*' adding that '*it's just the range that's the big ... I wouldn't say negative, it's just something that you always have to bear in mind*' (EV_#7). Such range issues were manifest in driving style for one driver, who noted that '*you have to be more prudent when you drive, more cautious, taking care of range*' adding that '*there's an element of stress; one is added, the other is reduced – stress of rushing, you cannot have that stress ... because if you rush, you spend too much of the battery so, in that sense, it removes some of the stress, makes you drive more smoothly*' (EV_#5). In concurring this notion, a perhaps more affectual response came from the driver who saw EVs '*appealing to a different set of senses, really ... the electric car appeals to your better nature, in the sense that it does stimulate a certain kind of peace of mind, whereas conventional vehicles are more likely to feature aggression*' (EV_#2).

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Some ICE-drivers felt that the ‘different’ experience of driving an electric car might actually be fleeting, with one saying that *‘it doesn’t have to be. Probably at this moment in time, yes ... but by the time that they’re readily available to buy, it would be very similar’* (#4), a sentiment shared by an EV-experienced ICE-driver who noted that *‘if I was to drive that every day, I’d ignore the differences, or I’d forget about the differences, they’d just become the norm but, at the moment, because it’s only occasional, then it is more noticeable’* (#1) while another view was that *‘we’ll get to the point where the experience of driving a car will be the same whatever’s under the bonnet’* (#12). Another ICE-driver with EV experience noted that *‘they don’t have gears, do they? They’re just ... they spin faster so it would be an automatic, effectively’* adding that *‘I don’t think it would feel any different. You would notice because it’s nice and quiet, and because you wouldn’t have a gearstick to mess about with’* (#10).

There was some uncertainty expressed regarding perceived differences between conventional and electric vehicles, with one ICE-driver saying *‘I know it’ll ... they’ll be quieter cars just from what I’ve seen on the TV and in the adverts and things, but I don’t really know what’s different’* (#11), while another admitted that *‘I’ve never driven an electric car, so I would have no idea’* (#9).

Some of the observations of the EV-drivers have alluded to how, from experience, EVs compared to conventional ICE cars, and how ICE-drivers’ perceived EVs to compare to their own cars prompted a variety of responses, and are borne out some of these experiences. One said that *‘I would perceive it to be a lot better, the actual driving experience. Smoother I would imagine, quieter, hopefully more environmentally friendly. Certainly better air quality’* (#3) while another stridently declared that *‘it would certainly be an improvement’* adding *‘I suppose an electric car that was built for efficiency, and super-efficiency like a [Citroën] C1 is, wouldn’t be that much different – it would be quieter, but that’s probably the only difference’* (#10). Such size-dependent sentiments echoed those of the ICE-drivers who thought that *‘because I’ve already got a small car, then there’s not quite as much of a difference. If I drove a BMW or something, then I should think it’d be more accentuated’* (#1) or noted that, a lack of noise notwithstanding, *‘on a basic car like this, an electric version wouldn’t be massively different’* (#5).

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One ICE-driver perceived EVs to be very similar to their existing car *‘apart from the engine note’* (#4), with another pointing out that *‘with electric motors, you’ve got, you know, it’s just a huge wave of torque ... I’m sure it’s going to be different’* (#12), while another suggested that *‘it’s just getting used to driving. It could be easier, basically because it would be slightly more modern, but I think ... it has a steering wheel, it’s got four wheels and you point it’* (#7). A perceived potential lack of motive power was reiterated by ICE-driver #6 suggesting that hilly terrain may present a challenge, in that *‘I tend to think in circumstances like that when you’re putting your car under that bit of stress that it might go ‘oooohh I haven’t got the power’*”, while another thought that an EV would be *‘perhaps slower, probably it would limit my freedom of flexibility because ... I don’t know ... what charge is required for the different types of vehicles, I suppose there’ll be a period of getting to know the limits like of battery power’* (#11), a feeling shared by #2, who thought that an EV would be *‘an inconvenience’* in comparison to their car, unless *‘you could get top-ups of electricity as quick as you could fuel at a garage’*.

Further to the observations and comparisons made by the EV-drivers, one felt that they *‘didn’t find it any different at all’* (EV_#6), while the EV experience of another was perhaps clouded by their dissatisfaction with the vehicle itself, such as with the *‘steering, performance, some of the suspension and handling attributes ... [and] ... disappointment with some of the trim’* (EV_#1); this driver wasn’t alone in this critique, as several expressed dissatisfaction with the ride and handling, with another describing their Indica EV as *‘more of a prototype’* (EV_#7), although how the quality and dynamics of the EV Indica compare to a mass-production ICE Indica is a moot point. The impression gleaned from the drivers was that, though possessed of EV technology, the Indica was a relatively unsophisticated vehicle, and it is possible that the EV-drivers’ EV experience may have been even more positive than it was had they driven vehicles such as the Nissan Leaf (a vehicle to which any positive, even fun, driving attributes I can attest). However, as was mentioned by Coventry City Council’s representative in 5.6.4, the timing of the CABLED trial and the roll-out of EVs from car manufacturers precluded this, perhaps to the detriment of the trial.

Nonetheless, it appears that not only did the EV-drivers find the driving experience of EVs acceptable, and occasionally superior, to the experience of driving their

conventional ICE cars, but that they also broadly bear out ICE-drivers' perceptions of them from which, incidentally, the early gendering of the electric car (see 2.3 and 2.6.3) is notably absent (see also 5.5.3). This suggests that not only did ICE-drivers know more about EVs than they realise (see 5.4.3) but that, in partial answer the 'barrier or lever' question posited in figure 3.1/6.2, the technicities pertaining to EVs should hold no more terrors than those encountered when learning the finer points of a new or different conventional ICE car – which would appear to be part of the appeal of a new automotive acquisition in any case (see 6.5.1) – especially if, from 6.5.4, we consider how some of the ICE-drivers tended to notice little about the controls of their own cars.

6.6.2 EV does it?

We have seen how ICE-drivers' perceptions as to the experiences of driving electric cars have been confirmed by the EV-drivers interviewed. But given that the nature of the car will necessarily change with a move to an EV automobility, how might EVs make us feel? Might motorists feel differently about their cars if they were electrically powered? Will a lesser mechanical interaction render the EV as a mere appliance? To this end, ICE-drivers were asked if they might think differently about their car if it was electric, and if so why?

The responses to this question produced an even split between 'yes' and 'no', with most of those saying 'yes' doing so on an environmental basis, as illustrated by the ICE-driver who shared a car with their parents and said that they '*deliberately chose to stop driving in an effort to reduce my ... footprint, so I suppose it'll make me feel like I was doing something*', in spite of misgivings that '*there's still electricity that you have to burn*' (#11). Despite this caveat, it was felt by some that EVs '*just seem so much cleaner*' (#10) and that, because of this, '*I think it'd be a more positive experience, really*' (#8) although one ICE-driver who had earlier confessed that they found driving to be 'a chore' noted that while they '*would feel a lot happier that there was less environmental impact*' that '*I don't believe for one minute that it would suddenly make me enjoy driving*' (#3).

It is interesting to note that a lack of knowledge regarding EVs was no barrier to one ICE-driver who enthusiastically said that '*I'd feel nicer as a person, as a human being*', and providing an analogy whereby '*when the kids were little, you know, if you used*

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non-disposable nappies, you'd get a sense of ... you were a bit pious about it' before deciding that 'you'd feel better than the gas-guzzler that's just burned you off at the lights ... it may not look as stylish, but you'd feel better' (#9). A question about any difference in how drivers might 'feel the car' following a shift to a low carbon automobility was raised by ICE-driver #12, who admitted that 'I think at this point in time I would, yes, because it'd be quite odd' but added that 'I suspect in the future ... I sort of link this to, like, operating systems on computers, on Macs, whereas, like Windows push operating systems, but no-one's bothered about that, they just want a computer that works, and I think electrics is like that at the moment – they're pushing electric, but no-one's bothered, they just want a car that does what they want it to'.

Such potential indifference was demonstrated by the ICE-drivers who said that they wouldn't feel differently if their car was electric, with responses such as *'not once I got used to it ... as long as it got me from A to B like this one does now, then that's all that matters to me'* (#1), views supported by others who said *'once the novelty had worn off, I don't think so'* (#5) and that electricity is *'just a form of power to get from A to B'* and, in repeating concerns mentioned elsewhere, *'electric isn't the most environmentally friendly way of doing that anyway'* (#7). One who said 'no' also repeated a previous caveat, namely if they *'could top up electricity the way I can fuel ... if that's all the difference there is'* (#2) but wouldn't be drawn on other potential differences, whereas the sports-car-owning ICE-driver said *'if it was driven by petrol or if it was driven by electric, it wouldn't make a lot of difference to me'* (#4) while another echoed the thoughts of #12 in that *'I don't care enough, you know'* (#6).

From Thrift's first definition of affect (3.4.1.1), an affectual 'flow' between ourselves and other people and/or objects is a two-way process, not only concomitant with human 'nature', our own essence, but, as exemplified by ICE-driver #4 and the analysis of their own car (6.5.6.2), also the nature and essence of other people/objects. However, on the basis of the responses above, we can posit an affectual flow not only between ourselves and other people/objects, but also between ourselves and concepts and/or notions.

The ICE-drivers who said that they would feel differently about their car did so on an environmental basis, as exemplified by ICE-driver #3 feeling happier about the reduced

environmental impact of their driving and by ICE-driver #9 feeling better in themselves about this reduced impact, and that these feelings were positive suggests that the electric car can somehow move us to a ‘greater perfection’. Such affectus might be borne of the essence and nature of electric vehicles, in that a reduced environmental impact is their *raison d’être*, and yet since none of these environmentally affected ICE-drivers had physically experienced electric vehicles before, with both the positive and (for some) inconsequential nature of this affectus would corresponding with Thrift’s second definition of affect (3.4.1.2) concerning what drives or motivates us. One thing that is clear from the responses above is that, regarding an overall affectus, ICE-drivers don’t necessarily regard the electric car as a ‘lesser perfection’, as long as it permits the freedom and flexibility – the essence – of a conventional ICE car. Although that is a challenge at the moment, it is one that the industry is addressing as battery development continues.

6.6.3 Peaceful EV feeling

However, the speculative nature of a perceived *affectio* regarding the electric car can be regarded as problematic since, as noted above, it requires the consideration of a conceptual or notional affectus when a true *affectio* can surely only come from encounter, and not be imagined, if it is truly to be perceived – after all, how can we perceive a perceived perception? Nonetheless, it can reveal any cultural (dis)inclination to such a disruptive technology, whether practical or cultural, in the face of how society has become conditioned to the car as we know it. That said, the only way we can truly consider a low carbon automotive affectus is from experience, and so how enquiring as to how driving an electric car made the EV-drivers feel is key in this respect.

For our purposes, this poses problems of its own. The usefulness of interviewing ‘in place’ was noted by Sin (2003 – see 4.3.2.1) and, in exploring an automotive affectus with regard to ICE-drivers’ conventional ICE cars by ascertaining how ICE-drivers’ cars made them feel, mention was made in part 6.5.2 of how being unable to interview ICE-drivers in their cars might preclude any such recollections in comparison to those ICE-drivers who *were* interviewed in their cars. By the same token, being interviewed after the completion of the CABLED trial meant that all of the EV-drivers were inevitably interviewed away from their electric vehicles, leading to a disconnection not

only in space, but also in time, especially in comparison to ICE-drivers possessed of much more recent recollections of any evocations of or from their car.

Nonetheless, when asked what, or how, driving an electric car made them feel, all the EV-drivers were able to comment, with the most commonly expressed feeling being a sense of ‘greenness’ and of doing one’s bit for the environment. Such a feeling was described by one of the drivers as *‘one of the biggest wins with driving an electric vehicle’* and that *‘in terms of environmental concern, it makes you feel that you are doing just the right thing’* (EV_#5), with another adding that *‘I felt it was very much a green experience and I was pleased about that’* (EV_#6). Wider environmental impacts were considered by the driver who explained that *‘it made me feel quite good about the environment because it’s not a great polluter. I know people make arguments up about “what’s it cost to make the batteries” and that kind of stuff, but the reality for me was I did feel like I was doing something positive for the wider environment, and I wasn’t polluting in quite the same way as other petrol or diesel drivers and I felt good about that’* (EV_#3) and, while all the EV-drivers felt positive about this aspect of EVs, one admitted that *‘it made me feel quite, er, I wouldn’t say smug, but it made me feel quite righteous’* (EV_#7) while another confessed to *‘a psychological sense of privilege and goodness in that you’re not throwing out fumes’* (EV_#4).

These feelings of greenness would correspond to Thrift’s seventh tenet of non-representational theory concerning novelty and aliveness, a notion which can also be said to allude to the sensation of speed. That the majority of EV-drivers interviewed derived such a positive sense of environmental wellbeing from the trial vehicles, and were still able to despite being distant from them for a period of time, is hugely encouraging and is testament to the power of such greenness and to the EVs *authenticity* (see 3.4.1.2 and 5.4.4) – this greenness is what the electric vehicle is all about, this is what it is for, this is its essence. In echoing the perceived feelings of greenness expressed by the ICE-drivers above, this perhaps hints not only at a new way that we can look beyond notions of speed or power to feel good about our cars, a novelty in itself, but also a way that those indifferent to the car might feel something about it after all, and may even transfer such feelings of greenness into other aspects of their lives – that would be quite an illustration of Massumi’s affectual synesthesia (see 3.4.1). As to how long these feelings of automotive greenness might last should EVs

become more mainstream and conditioned to, only time will tell but, at the moment, such a ‘feelgood factor’ resultant of a ‘green affect’ invoked by electric cars provides a unique selling point which transcends conventional rationalities as an incentive for uptake. It may need to, as the indifference suggested by some of the ICE-drivers, and experienced by some of the EV-drivers, could suggest that any barriers to an uptake of electric cars may be practical ones, such as the long standing issues of price, range and practicality, and less pertaining to any subconscious disposition.

A sense of *avant garde* was also mentioned, with one EV-driver noting the feeling that ‘*you’re perhaps on the cutting edge of some technical development and something which is very green, which is very good*’ (EV_#4), while another confessed that they ‘*felt quite proud really for being part of the project, almost like a trailblazer, and that was nice*’ (EV_#6), statements which allude to an affectual ‘flow’ between the cars and drivers (see 3.4.1.1 and 3.4.2.4). On a different aspect, one driver said that driving an electric car had made them feel ‘*more patient, more peaceful, less aggressive ... a little bit of ‘holier-than-thou’*’ (EV_#2) – comments which resonate with the observation of EV_#5, above, regarding stress while driving an EV – although another said that while driving an EV made them ‘*feel good because I was saving money and helping the environment*’ there was ‘*some anxiety in regards to ... how to make appointments, how to get to paces and do things*’ (EV_#1).

This latter observation is potentially crucial, as it can be argued that such anxieties regarding freedom and convenience are counter to the essence of the motor car or the automobile, which has provided the means to go where we want to go, and when, without really thinking about it; that said, it is also possible that EVs may actually help to maintain automobility in a world where legislation may in future dictate how or when cars may be used (see 5.5.1). The feeling of *avant garde* is one that will necessarily diminish over time, but nonetheless is another ‘feelgood’ aspect which can be crucial to the initial uptake of EVs.

When asked as to how feelings engendered by the EVs compared to those prompted by conventional ICE cars, EV-drivers referred to an occasional lack of reassurance of an EVs all-around abilities compared to the abilities of an ICE car, with one perhaps illustrating a conditioning to the ICE in that, with their conventional car, ‘*you can drive*

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it at 85 in the wet knowing you're fairly safe, and the Tata was always ... it'd never have done that, it wouldn't have gone that fast, and you'd never feel as safe as you may well have been' (EV_#4). Another example of ICE conditioning was noted by the driver who noted that *'it's quite an ordinary experience now, driving a car'* and that, with conventional cars, *'you've got more security, you're more relaxed because you know you can just pull into a garage and fuel up again'* adding that *'in the Tata, I could do everything I wanted to do ... it was a disappointment to have to come back to an ordinary car'* (EV_#6). This sentiment failed to resonate with the driver who said that, compared to a conventional car, driving an EV made them feel *'less capable of going anywhere and doing anything ... of spontaneously making decisions and changing plans'* though, at the same time, they felt *'more responsible in both environmental senses and responsible for personal finances'* (EV_#1) as a result of driving an EV.

In a similar vein, one driver said that they got a *'strange pleasure out of being an energy miser, so you find yourself thinking ahead much more in your driving style'* and that *'every time you see the energy flow into the battery rather than into the red out of the battery, it gives you a kind of warm feeling'* (EV_#2). Despite basking in this warmth, this driver went on to say that *'I think you're far less likely to get an adrenaline rush in an electric car than you would in a conventional one, especially as I'm a bit of a car enthusiast ... I tend to have quite quick cars'*, suggesting that the different kind of performance afforded by an electric car (see 2.6.3) may be a 'lesser perfection' (3.4.1), at least to them. That said, they also thought that an EV *'appeals to your sense of individualism at this stage ... a lot of people want to know what it is and they're very interested in it'*, a sentiment resonates with Thrift's seventh tenet of non-representational theory which, for our purposes, pertains to the contemporary novelty value of EVs. Indeed, an interest from members of the public was noted by several of the EV-drivers, including one who said that running an EV provided *'a point of conversation ... [people] want to know about it because people are interested, I think, in new technology, and they want to suss out for themselves whether or not it's going to be relevant or not to their needs'* and that, as a result of such attention *'it does make you feel special because people notice it, you see people pointing ... it's a talking point'* (EV_#3).

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Driving an EV didn't have an impact upon everyone, such as the EV-drivers who felt that there was no difference in the way that an EV made them feel compared to a conventional car as, to them, a car was '*just a means of getting from A to B*' (EV_#7) and another who expanded upon that notion, saying that '*probably I'm not that passionate about cars to the extent that it takes me from A to B and that's it. In doing so, the electric does it in an environmentally friendly way and a more economical way so I don't notice much from one to the other*' (EV_#5). Again, such comments echo those made by ICE-drivers who were similarly indifferent to their own cars (see 6.5.4) and, as noted above, suggest that in terms of a 'technicity' (3.4.2.5), a shift to electric propulsion and the technologies therein may hold no fears for many drivers.

It is important to consider one aspect that precludes a truly direct comparison between the affects and non-representationalities of conventional cars and EVs here, which is the affect of ownership noted in 6.5.2, above. This is because, being part of a trial, the Tata Indicas used by the EV-drivers were not their own, but were leased. As such, any affectual or non-representationality inferred inevitably lacks the authentic depth of that manifest and expressed by ICE-drivers pertaining to their own cars, not only in the leasing of the cars but also in the intrinsic trial-status of the vehicles – which elicited positive feelings in itself – during tenure. This would suggest that how such low carbon affectations compare with those concomitant with conventional car ownership can really only be ascertained by liaising with EV owners.

Nonetheless, reports of 'sensations' such as greenness and *avant garde* suggest that most of the EV-drivers were 'affected' in some way – such feelings cannot be described as visceral, nor they are they physically felt or experienced; instead, they hint at something more non-representational, the 'affect' of an electric car on the EV-drivers, and contrast with the feelings that ICE-drivers expressed with the ICE cars they drive at the moment.

Might EVs invoke such feelings or 'affections' in a wider motoring population in the future? It appears from the responses of the EV-drivers that while practicality and convenience are issues at the moment, ordinary motorists could enjoy the driving experience of the electric car, both physically and psychologically and, if we couple this with an amenability towards environmentally friendly vehicles, as noted in 5.5.3,

then it is possible to suggest that while low carbon vehicles are perceived and experienced differently to conventional ICE vehicles, this is not thought to be a barrier to their uptake (see figure 3.1/6.2). Indeed, to answer the question posed at the end of 6.5.6.2, the driving characteristics of EVs noted in 6.6.1, coupled with feelings such as greenness, goodness and patience expressed in 6.6.1 and 6.6.3, suggest that EVs have the potential to move us to a greater automotive perfection, environmentally and societally at least.

6.7 Consuming the car

This analysis chapter has dealt with the practical, symbolic, experiential and affectual facets of the car and the way it is regarded and ‘consumed’. In doing so, it has sought to explore how the car transcends mere utility to become more than just transport, even if some motorists don’t realise this.

The questionnaire data (6.2) suggests that the rationale of car ownership is a prosaic one, focussing on the utility of the car, denying any of the style and status the motor car may afford and, in doing so, denying the literature. However, while we see from 6.3 that the mundane priorities of car ownership are indeed undeniable – especially in terms of cost and practicality – we see how environmental considerations were known even if it wasn’t evident from the ICE-drivers’ current choice of car, and we also see how culture can play a part an automotive rationale.

Exactly how culture can play a part in our regard of the car was explored in 6.4, as was how the representational notion of ‘you car says what you are’ still has currency. Indeed, this default manifestation of the consumption of the car constitutes the initial aspect of a deeper, less obvious consumption beyond the representational, posited in 3.4, was explored in 6.5 and pointed to how people subconsciously ‘think’ and ‘feel’ the car.

However, while these practical, cultural and affectual facets are usually overlooked in respect of academic automotive discourse generally, let alone in an environmental context, the more widely-considered instrumental aspects of EVs are nonetheless crucial, as no matter how highly we regard, or come to regard, low carbon vehicles, we will need them to ‘work’. From 6.6, we can see that they can, although we (and the

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technology) are perhaps not there quite yet. That said, we saw in chapter 5 that there is a public amenability towards low carbon vehicles and an institutional aspiration to facilitate them.

So where is here, and how can we go on? The concluding chapter considers where we are regarding the socio-cultural consumption of the car, and in terms of the attitudes and opinions the stakeholders and gatekeepers who might facilitate this, and so how we might proceed.

7. Whence and whither a low carbon automobility?

7.1 Introduction

This study set out to assess if the way we ‘consume’ the car – that is, the way we regard the car status symbol, avatar, icon, cultural artefact and experience – may be a barrier to the uptake of low carbon vehicles, much as the commonly cited issues of costs, technology and (im)practicality, while at the same time bearing these issues in mind as part of a holistic low carbon automobility.

Asserting the notion that the way we consume the car was a key, yet overlooked, aspect of the environmental impact of the car, this study sought to look beyond a default car-as-representation view to car consumption – while also acknowledging its importance in this respect and so taking it into consideration – and to consider how the car makes us ‘feel’ and whether this may change as the nature of the car necessarily changes with a move to low carbon automobility.

7.2 Epistemological efficacy and contribution

This study is predicated on the notion that while much has been written about the technologies, costs and (im)practicalities of low carbon vehicles, the socio-cultural consumption of the car is an overlooked aspect of its environmental impact. The realm of transport geography is a largely quantitative domain, consisting of statistical models of uses and movements with comparatively little research about the people behind these uses and movements. Though valid in their own right, such transport models can only indicate ‘what...?’; they can’t say ‘how...?’ or suggest ‘why...?’.

This is where I come in. But what exactly is my contribution?

As an avid ‘consumer’ of the car and its cultural logics (Gartman, 2004), I have long been interested in how others consume or regard the car and why they do so in the manner they do; some cars are feted, some are mocked, many are just used. More recently, this interest has been coupled with an environmental concern, meaning that although I revere the car as culturally dynamic artefact, I am aware of its environmental impacts and that, as a society, we need to ‘do’ automobility better.

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My research question asked ‘Are extant automobilities a barrier or a lever to a low carbon automobility?’, but to answer this we need to ask how do we ‘do’ automobility? The titular prefix of this study asked ‘how do we go from here?’, but where is ‘here’? How is the car ‘consumed’ and regarded?

Having been schooled in a postmodernist approach to human geography, grounding my BSc dissertation accordingly, the notion of the car as representation was an obvious starting point from which to assess the consumption of the car, and yet an allegedly passé postmodernism can even today be appropriated further; it was in also exploring a postmodernist view upon the environment that a direct philosophical link between the environment and the more-than-instrumental rationale behind the cars that people may choose to drive was made. But, just as there is more to the car than its instrumental use as transport, there is more to the socio-cultural aspect of the car than semiotics, especially as the nature of the car will necessarily change in the pursuit of a low carbon automobility. Appropriating the notions of affect and non-representational theory provides an ideal framework with which to assess a deeper consumption of the car, permitting the exploration of how the car makes us feel, complementing a postmodernist approach to the representational nature of the car with a more affectual and non-representational approach to the more sensual and experiential aspects of the car, so as to assess how we might present these representations, so as to provide a more holistic consumption of the car than has perhaps been the case.

This is possible because affect and non-representationality stems from an individual, innate essence and nature, and therefore drives experience of, and regard for, objects and artefacts such as the car and its attendant automobilities, whether as motorists or pedestrians. As such, affect and non-representational theory can be used as a means to explore automotive experiences and evocations as part of a consumption of the car.

Figure 7.1 summarises the many and varied, even messy, outcomes of implementing the conceptual framework depicted in figure 3.1/6.2 which posited a postmodern/affectual/non-representational epistemology as a means to explore an existing consumption of the car and subsequent automobilities automobility, and so

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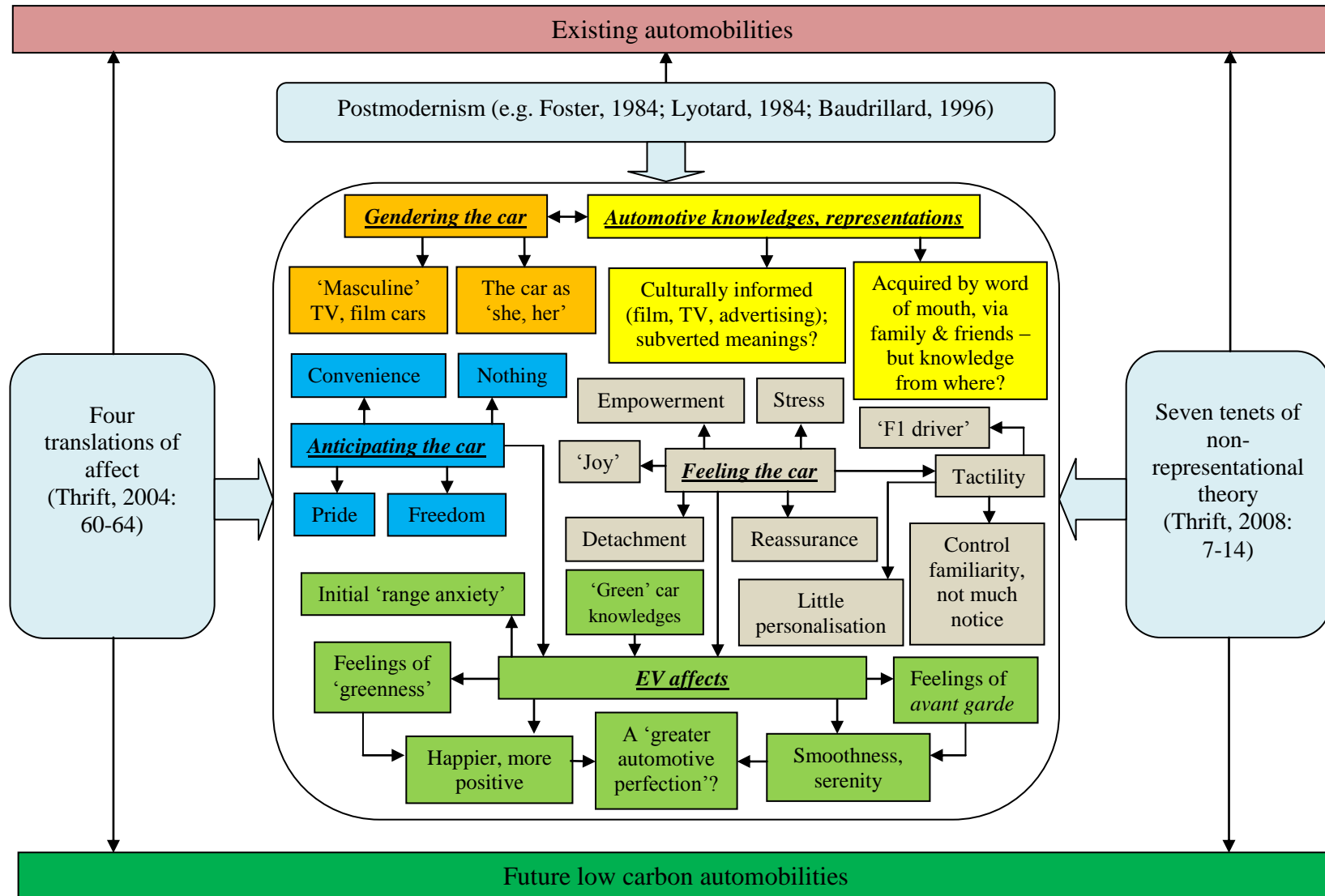


Figure 7.1 'How do we go from here...?' conceptual efficacy

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assess if such automotive consumption would act as a barrier or a lever to a low carbon automobility. Appropriating a postmodernist/poststructuralist philosophy to explore automotive representations reveals concomitant knowledges and perceptions, from an almost entrenched gendering to wider cultural influences, which may (or may not) be subsequently manifest, even if subconsciously (see 3.2). The application of Thrift's translations of affect (2004 – see 3.4.1) and tenets of non-representational theory (2008 – see 3.4.2) permit us to look beyond such automotive representations, so as to appraise how motorists experience and so 'feel' their cars, including any sense of anticipation of their cars, with an automotive 'imminence' here generating notions such as convenience, pride, freedom, or even nothing. It is in how the car is experienced and felt that the epistemologies of affect and non-representational theory can make the greatest contribution in assessing if, and so understanding how, extant automobilities can aspire to a low carbon automobility, not only in wider feelings of empowerment and reassurance that the motor car brings, but also feelings synaesthetically wrought of the tactility and/or sounds of a car, feelings which will necessarily differ with a move to the automobility afforded by electric cars. Indeed, drivers of electric cars revealed feelings of greenness, serenity, even *avant garde*, fostering a greater positivity that, following Spinoza (1996 [1677]), posits a 'greater automotive perfection' in the future. The aspects depicted with respect to the way that the car is represented, gendered, anticipated and felt, and the feelings and experiences resultant of electro-mobility, are further expanded upon in 7.3.1, 7.3.2 and 7.3.3.

From the car as representation to the role of the car industry as bricoleur reinventing, re-appropriating, even subverting its icons, postmodernism, though deemed passé, still has much to say in a consumer society seemingly wedded to the car (see 3.2). As 'the ultimate apparel' (Nieuwenhuis, 2008), the car as avatar and its concomitant semiotics may constitute a default consumption of the car, but it is more than a postmodernist representational construct, since the object that is the car as avatar is the source of the initial affectual 'flow' between the car and ourselves, our first experience of it, upon which any thoughts and feelings and emotions are based.

In addition to establishing a popular consumption of the car as a step towards a deeper, more ephemeral and less obvious experiential and sensory consumption of the car, postmodernism has been appropriated to ground this research environmentally. That

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postmodernism had much to contribute towards the environmental debate (see 3.3) came as a surprise, and might suggest that reports of its passing have been exaggerated. Indeed, as climate change naysayers and deniers cling to a modernist view of the Earth as something for us to control, and even exploit, the parallels between postmodernist thought and environmental imperative suggests the time has come for its discursive re-appropriation and re-introduction, in much the same way as the car industry has done with its icons.

In comparing the conceptual framework depicted in figures 3.1/6.2 and the findings illustrated in figure 7.1, the efficacy of the epistemological position adopted for this research is apparent, and the conceptual framework so adopted as an analysis tool validated. Indeed, appropriating the concepts of affect and non-representational theory to explore beyond the representational aspects of the consumption of the car has been a real success, in that not only have Thrift's affectual translations (2004 – see 3.4.1) and non-representational tenets (2008 – see 3.4.2) proved most apposite in terms of exploring the sensory and experiential aspects of car consumption, of feeling the car, but in that it gave the ICE-drivers interviewed pause for thought as to just how they experienced and consumed their car. As figure 3.1/6.2 posited some more-than-instrumental aspects concomitant with automobility that may impact upon a transition to a low carbon automobility and how these might be explored, then figure 7.1 depicts how this conceptual framework has permitted the exploration of these aspects and presents a summary of the feelings, experiences and manifestations of how the car was consumed by the ICE- and EV-drivers interviewed, and suggests that the aspects posited in figure 3.1/6.2 are not necessarily barriers to a low carbon vehicle uptake but are nonetheless linked, for example in differing manifestations of pride, empowerment or even detachment. If we consider how the nature of the car will change as a result of the various environmentally-friendly propulsion technologies being developed by car manufacturers, such a postmodern, affectual and non-representational framework could well be useful in assessing the potential appetite for, and transition to, a low carbon automobility.

7.3 So how *do* we go from here?

An online questionnaire was the first step in both data collection and participant recruitment and, as such, underpinned the research thereon. An interesting aspect of the

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questionnaire data was that it seemed to deny the literature in that it indicated an automotive rationale that was overwhelmingly practical – prosaic even – and which seemed to contradict the literature. Was this really the case or did this hint at a subconscious nature to the consumption of the car?

ICE-drivers overwhelmingly admitted that cost and practicality considerations impacted upon their choice of car and, given that these are both real concerns pertaining to low carbon vehicles at the moment (although purchase costs are coming down), this would suggest that establishing a nascent low carbon automobility might be problematic. However, various environmental considerations – from fuel economy to end-of-life recyclability – were part of the decision making process for some ICE-drivers and was at least an aspiration for some of those for whom it wasn't, with purchase cost precluding such considerations for some. Nonetheless, that such aspirations exist augurs well for a low carbon automobility. Despite a seemingly minimal impact of cultural influences upon ICE-drivers' current car choice, that there was a cultural mien to the car was acknowledged by ICE-drivers, whether this was through television, film or advertising, and this acknowledgement was explored during the focus group sessions.

7.3.1 Signs on the road? Automotive knowledges and representations

The way in which cars were used and/or portrayed in films and television was felt to have a huge bearing on how they were regarded, and was seen to confer an iconic status on them. Whether this was positive (e.g. James Bond's Aston Martin), fun (e.g. the 'Herbie' Volkswagen Beetle) or even derogatory (e.g. Del Boy's Reliant Regal van in *Only Fools and Horses*), there was something 'totemic' about the way in which cars were presented and their characters represented, and that this totemic status is perhaps more valuable in terms of sales with more affordable cars is an important consideration as the purchase prices of low carbon vehicles inexorably approach those of more conventional cars. This would suggest that careful placing of low carbon vehicles in various cultural media could enhance the image of low carbon vehicles as a means to foment an uptake.

While this research sought to look beyond a default-car-as-representation approach to the consumption of the car, the importance of this aspect cannot be understated. For

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example, it is interesting to note that most of the ICE-drivers felt that their car said something about them, such as financial or domestic status or even pointed towards a degree of individuality. However, despite an overall acknowledgement of the semiotic nature or power of the car, only a minority felt that their car was a true reflection of them, and for a variety of reasons.

For example, cost limitations were cited, although it can be argued that whether we are buying food or holidays or cars, we discern within our budgets; others said that they didn't buy into the notion of the car as avatar. That the majority of ICE-drivers thought their car wasn't a reflection of them suggests that they didn't consider the notion of the Other (see 2.3), and the fact that one's car can say what we are *not* as much as what we are – cars can say that we're not wealthy, that we're not obsessed by speed, or even that we're not bothered about what car we drive – may in turn suggest a subconscious consumption of the car.

As to where such semiotic knowledges come from, it is difficult to say. They may come from cultural media (see above), which again suggests that careful placing of low carbon vehicles therein could pay dividends regarding their uptake, or they may be grounded in observing how others consume, or have consumed, their cars which – as is the case with word-of-mouth information (identified as an important source of automotive knowledge) – begs the question of where others may get *their* knowledge from.

Wherever our knowledges are sourced, the fact that a car can say something even when it is perceived to say nothing gives support to the argument that the semiotic and representational power of the car is undeniable, and illustrates how postmodernism, despite being deemed passé by some, still possesses some currency within automobility and, as such, plays some part upon the environmental impact of the car. This idea is exemplified in the overwhelmingly positive response that would be afforded to drivers of low carbon vehicles by the ICE-drivers if they saw them, regarding such vehicles and their drivers as 'socially responsible' and even 'cutting edge'; very positive opinions, although whether such qualities will usurp the more conventional automotive mores and miens remains to be seen.

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7.3.2 Gendering the car

The importance of the way that the car is represented in film and television was noted in 7.3.1, and there is a seemingly masculine bias in the way this is manifest, something which may be perpetuated in the deployment of any subsequent merchandising such as programme- or film-affiliated model/toy cars. Gendered representations of the car were also apparent in the advertising shown to the focus groups, from an observed ‘Jack-the-Lad’-ism of the BMW 1-series advert, to a character-posed sex appeal and subsequent ‘bird-pulling’ potential in the advert for the Renault Megane Coupe.

Gender-based notions towards car ownership were also alluded to, whether physically, in a perceived femininity towards smaller cars, or emotionally, with the suggestion that the car can invoke otherwise latent emotions within the male psyche, something which may be a corollary of the ‘different relationship’ noted by Cresswell and Uteng (2008) that men have with cars compared to women.

Such an overarching view is perhaps challenged, however, by the ICE-driver who repeatedly referred to their car as ‘she’ and ‘her’. While an intuitively feminine identity has long been applied to the motor car, and has underpinned traditional automotive regard, that the ICE-driver ascribing such gendered appellations was female is interesting, and underlines how an underlying male-biased gendering may be contested. It is also interesting to note that the early gendering of the electric car (see 2.3 and 2.6.3) was absent among all participants here, something which may point to how low carbon vehicles might be ‘consumed’ differently, and how their ‘meaning’ and/or *raison d’être* may have changed in the light of the environmental imperative.

7.3.3 Anticipating and feeling the car

Feelings of novelty and a ‘new toy’ mindset wrought more of acquisition than of a car’s age were common thoughts and feelings upon the ICE-drivers’ acquisition of their cars, while the feelings and thoughts resulting from seeing or approaching their cars ranged from contentment as a result of its convenience, or pleasure because of freedom or the prospect of simply driving, while some felt nothing in particular. Thoughts and feelings behind the wheel included those of empowerment and reassurance, but also feelings of detachment and even stress. Current low carbon vehicle technology, especially electric vehicle technology, may still have issues regarding convenience – perceived or

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otherwise – and, to some extent, freedom; however freedom is perhaps the essence of the car, and current EV technology may undermine this essence of the car to a degree, although the improvements in battery technology continue apace. However, from the experience of both myself and of the EV-drivers interviewed, it is possible that the dynamic nature and practice of driving EVs can go some way to countering the kind of stress experienced during conventional motoring (within range, of course!), for example by their lack of noise and different driving characteristics.

Those ICE-drivers who commented on the feeling of the controls of their cars did so mainly out of their own automotive enthusiasms or in bemoaning the difficulties and dynamic shortcomings of their vehicles. That half of ICE-drivers didn't pay particular attention to the weighting or feel of the controls of their car (mainly out of habit or subconscious action), coupled with the fact that few had adorned or personalised their cars, suggests that the car is perhaps a non-space – a place to do, not to be – for many; indeed only one ICE-driver explicitly referred to their car as 'my little area'. If we consider the freedom and privacy afforded by the car, this idea of the car as a non-space is perhaps odd and warrants further investigation as part of a sociology of the car; certainly, only a minority of the cars in which interviews were conducted bore any sign of the ephemera and clutter inherent with their use, with most conspicuously tidy. Nonetheless, it is suggested that any change in the nature and driving practices concomitant with low carbon vehicles might not necessarily be an issue once learned.

The reason why a move to a low carbon automobility is important is that the car is unlikely to go away; the car is too convenient, too useful and, as we can see from the interview analyses, carries many meanings and sensations that elevate the car to a status beyond that of a mere appliance. As if to underline this enhanced status, ICE-drivers said they felt that the car provides freedom and empowerment, security and thrills, and were overwhelmingly positive regarding how their own car makes them feel overall. Upon appropriating Spinoza's (1996 [1677]) definitions of 'joy' and 'sadness' in an attempt to clarify the impact of such notions, none of the ICE-drivers believed that their car made them feel sadness, that is to say that the car 'passed their minds to a lesser perfection', suggesting that the car was perceived to be at least a neutral, and largely positive, influence on their lives, even if this positive influence was invoked largely as

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a result of the flexibility and freedom afforded by the car, as opposed to any wider automotive ‘buzz’.

7.3.4 ‘Green’ car knowledges and EV affects

The research question for this study asked if the contemporary ‘consumption’ of the car would act as a barrier or as a lever to an uptake of low carbon vehicles, and figure 3.1 depicted some aspects of contemporary automobility to be assessed against aspects of a future low carbon automobility. The efficacy of establishing feelings and experiences concomitant with extant automobility is noted above in 7.3.2, and comparison of both figures 3.1 and 7.1 suggests that there is cause for some optimism regarding the potential for low carbon vehicle uptake, and so perhaps addressing the citizen/consumer dichotomy noted in 2.3 surrounding car choice with regard to the environment, with only an instrumental aspect of new technologies pertaining to ‘range anxiety’ and recharging times (depicted in figure 3.1 as new technology ↔ freedom) a potential barrier thereto.

It has been noted above that low carbon vehicles were viewed very positively insofar as ‘auto-eco-semiotics’ are concerned, and if people are minded to view drivers favourably on the basis of their driving low carbon vehicles, it is possible that they would like other motorists to think similarly of them. The overall view of ICE-drivers to low carbon vehicles was positive and, while one ICE-driver thought that the notion of an environmentally friendly car to be oxymoronic, there were several ideas posited as to what might constitute a ‘green’ car, whether in terms of emissions from ICE exhausts or electricity generation for EVs, of manufacture, or even of shared use. There were also concerns about the high purchase price of low carbon vehicles, especially given their limitations at the moment but, overall, ICE-drivers were amenable to the prospect of owning and driving low carbon vehicles, especially if there was greater price parity between them and conventional cars.

Another indicator as to a positive disposition towards a low carbon automobility was that the majority of ICE-drivers said that they would have an electric version of their car, despite sometimes knowing little about the technologies therein, citing lower running costs, a lesser environmental impact and the fact that it would suit their current car use. Some thought that they would feel differently about their car if it was electric,

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in that they would feel better about themselves as well as happier and more positive about the diminished environmental impact, which were sentiments experienced by the EV-drivers who took part in the CABLED trial. Others were less overtly positive, though by no means negative, believing that there would be no difference in how they felt as long as the electric car does what they want it to, while there were concerns over the limitations of current technology in terms of range, price and recharging time.

From the way that the conversations in the focus groups evolved, it would appear that the cultural connotations ascribed to the car as we know it would not necessarily preclude a move to a low carbon automobility. We may derive the meanings of cars from the various media that we consume, but the way that cultural aspects featured little in discussions about low carbon vehicles in the later stages of the focus group sessions would suggest that any extant cultural connotations concerning the car won't necessarily be a barrier to their uptake.

7.3.5 Policy practicalities

From the observations above, it can be said that the way the car is regarded may not be a barrier towards an uptake of low carbon vehicles – people are disposed towards them, cost and range concerns notwithstanding. However, one of the major barriers to an uptake of low carbon vehicles is a lack of knowledge concerning policy and incentives among the public, as well as a seemingly chaotic implementation of policy and infrastructure.

There was little knowledge of the incentives towards low carbon vehicles from ICE-drivers, with a minority suggesting various VED bands based on tailpipe CO₂ emissions, and few even mentioning the government's plug-in grant (only one ICE-driver knew how much the grant actually was). One mentioned London's Congestion Charge but, these measures aside, there was no real certainty regarding low carbon vehicle incentives at all. Little was known about the government's low carbon vehicle policy either, with some vague mentions of reducing tailpipe emissions or investing in low carbon vehicle manufacture.

There was some disquiet from other stakeholders over the implementation of low carbon vehicle policy and infrastructure; indeed one suggested that there was no overt

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policy, merely an itinerant aspiration, an approach which can only lead to chaos. One example of such chaos concerns the lack of a standardised charging hardware for the myriad charging facilities over the various plugged-in places regions, as cited by one stakeholder, leading to EV drivers requiring several ‘keys’ and sockets for the differing recharging systems across the country.

This is an unfortunate situation. After all, there are standard fuel-pump nozzles across different parts of the country, and the ability for any car to refuel at any petrol station is surely one factor that has facilitated the rise of the internal combustion engine, and is one aspect of the car, and automobility, to which we have become conditioned. As such, it is perhaps unreasonable that those who have accepted to current limitations and compromises of electric mobility should be inconvenienced even further, and it is surely obvious that a standardisation of hardware, as mandated by the EU early in 2014 in adopting the ‘Type 2’ plug across the mainland continent, can only assist an uptake of EVs. Yet the UK government would rather that free market dogma should dictate a choice of recharging hardware. Such uncertainty can only impede infrastructure investment and roll-out, as well as a wider EV uptake.

With policy as it is, it would appear crucial that the public somehow engage with EVs if they are to learn anything about them. While vehicle trials such as CABLED allows the public to experience EVs (at a cost) and raises their profile via an increased visibility there is a case for a wider engagement with the public, as Renault found with their series of ‘ZE Roadshows’ in 2012 whereupon the ignorance of the wider public as regards technology, performance and even recharging was revealed. In addition, talking to EV-drivers revealed that those who’ve driven EVs like them, and surely it makes sense to provide the public with the opportunity to take even a brief spin, so as to experience the different driving sensations that an EV affords. Events such as Renault’s ZE Roadshow and the late EcoVelocity events provided just that and, from my own experience of attending such events, provide food for thought.

7.4 Going on from here

Despite early indications from the questionnaire data, it appears that people do ‘consume’ the car – even if those who consider themselves immune to such car consumption only do so by ascribing the notion of the ‘Other’ to their car. Cultural

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knowledges and connotations abound and it is easy for a car to be seen in either a positive or negative light on the strength of these. People are positively disposed to their cars, on the basis of an innate freedom and flexibility if nothing else.

ICE-drivers were positively disposed to both the idea of low carbon vehicles and of those who would drive them, and any perceived feelings of well-being and greenness resulting in driving an electric car were actually experienced by some of those drivers who took part in the CABLED trial. The lack of attention paid to their cars' controls by ICE-drivers though habit and subconscious familiarity suggests that different experience of driving an EV would perhaps be no issue once learned, and their ease of driving may even be a positive boon to those less disposed to the activity.

Issues of cost and range remain, although prices are coming down, as illustrated the Nissan Leaf, and battery technology continues apace. However a bigger barrier appears to be a lack of knowledge on the part of the public and a lack of joined-up thinking on the part of policy. In addition to informing the public as to the benefits (and pitfalls) of electric cars, manufacturers could do more to let the public experience electric cars and anything that better informs people as to their benefits, accessibility, performance of EVs (and the way in which they perform), can only foment an uptake of low carbon vehicles.

That is how, insofar as a low carbon automobility is concerned, we go from here. But what of this research – where can this go from here?

7.5 Applying an automotive affectus - proceeding from here

This research has focussed upon how a few motorists pooled from within two unitary bodies regard and experience – that is, consume – their cars, and how these motorists may be amenable to the prospect of a low carbon automobility. An obvious extension of this research would be to assess the car consumption and automobilities among other groups, populations or even car types, to gauge reactions to automobility, and hopefully capturing opinions upon a wider range of cars. How, for example, might a population outside the public sector view the motor car or the need for low carbon vehicles? How might those in wealthier areas than either Coventry or Rochdale, who may necessarily have different cars to 'consume', see things? How might the consumption of EVs more

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competent, more polished, than the Tata Indica reported on by the EV-drivers interviewed be manifest; how would they make their drivers ‘feel’?

But the epistemology employed here can be applied to other automotive and environmental research. The latter suggestion points to affectual concerns of essence and nature, of authenticity, with respect to the car being consumed. This authenticity (or otherwise) can be bound up in the badge engineering and platform sharing prevalent within the car industry today (and historically, too) or in the engineering involved in the development of electric vehicles – compare and contrast the adapted-from-ICE Tata Indica EV or Renault Fluence with that of the purposely developed Nissan Leaf or Tesla Model S. Applying notions of affect and non-representational theory within a automotive historical context can augment the work of Gartman (2004), for example, in providing a new perspective in how we may have got ‘here’ in the first place.

From this research, it is clear that not only are the concepts of postmodernism, affect and non-representational theory appropriate in researching the motor car, but that the motor car is the ideal site to explore theories of postmodernism, affect and non-representational theory, thereby raising possibilities for a new perspective upon geographies of the car, past, present and future.

8. References

- Addis, M. & Podestà, S. (2005) Long life to marketing research: a postmodern view. *European Journal of Marketing* 39(3/4): 386-412.
- Alkhalisi, F. (2014) Pick & Mix. *Electric & Hybrid Vehicle Technology International* July 2014 pp 50-58. <http://viewer.zmags.com/publication/396d3326#/396d3326/52>. Accessed 25/07/14.
- Alvesson, M. (2002) *Postmodernism and Social Research*. Open University Press. Buckingham.
- Anable, J., Lane, B. & Kelay, T. (2006) *An Evidence Base Review of Public Attitudes to Climate Change and Transport Behaviour*. <http://assets.dft.gov.uk/publications/pgr-sustainable-reviewtransportbehaviourclimatechange-pdf/iewofpublicattitudestoc15730.pdf>. Accessed 10/01/14.
- Anderson, B. & Harrison, P. (2010) The promise of non-representational theories. In Anderson, B. & Harrison, P. (Eds.) *Taking Place: Non-Representational Theories and Geography*. Ashgate. Farnham.
- Augé, M. (2008) *Non-Places: an Introduction to Supermodernity*. Verso. London.
- Autocar (2011) *Lancia's four new Chrysler models*. <http://www.autocar.co.uk/News/NewsArticle/AllCars/255453/>. Accessed 17/02/11.
- Autocar (2012) *Original Mini voted best British car*. <http://www.autocar.co.uk/car-news/motoring/original-mini-voted-best-british-car>. Accessed 30/08/12. (10/01/14)
- Autolib (2014) *Home page*. <https://www.autolib.eu/en/>. Accessed 15/07/14.

8. References

- Axsen, J., Orelebar, C., Skippon, S. (2013) Social influence and consumer preference formation for pro-environmental technology: the case study of a U.K. workplace electric vehicle study. *Ecological Economics* 95: 96-107.
- Bailey, D. (2013) *Eurozone car crash continues*.
<http://www.birminghampost.co.uk/business/business-opinion/david-bailey-eurozone-car-crash-4702822>. Accessed 24/07/13.
- Baker, E., Hudson, P. & Knapman, C. (2012) What we're driving: Renault Twizy Urban, *Daily Telegraph Motoring Supplement* 02/06/12 p13.
- Bahktin, M. M. (1984) *Problems of Dostoyevsky Poetics*. Minnesota University Press. Minneapolis.
- Bakker, K. (2010) The limits of 'neoliberal natures': debating green neoliberalism. *Progress in Human Geography* 34(6): 715-735.
- Bakker, S. (2010) The car industry and the blow-out of the hydrogen hype. *Energy Policy* 38: 6540-6544.
- BARB (Broadcasters Audience Researching Board) (2011) *Weekly top 30 programmes*.
<http://www.barb.co.uk/report/weeklyTopProgrammesOverview?>. Accessed 18/08/11.
- BARB (2013) *Top 10s – BBC2*. <http://www.barb.co.uk/viewing/weekly-top-10?>. Accessed 05/08/13.
- Bardi, U. (2009) Peak oil: four stages of a new idea. *Energy* 34(3): 323-326.
- Barkenbus, J. (2009) Our electric automotive future: CO₂ savings through a disruptive technology. *Policy and Society* 27: 399-410.
- Barrett, J. & Scott, A. (2003) The application of the ecological footprint: a case of passenger transport in Merseyside. *Local Environment* 8(2): 167-183.

8. References

- Barry, B. (2009) Toyota Prius (2009) hybrid CAR review.
<http://www.carmagazine.co.uk/Green-Cars/Search-Results/Drives/Toyota-Prius-2009-CAR-review/>. Accessed 04/08/11.
- Barthes, R. (1957 [1972]) The New Citroën. *Mythologies*. Jonathan Cape. London. pp 88-90.
- Baudrillard, J. (1996) *The System of Objects*. Verso. London.
- Bauman, Z. (2000) *Liquid Modernity*. Polity Press, Cambridge.
- Bayley, S. (1986) *Sex, Drink and Fast Cars: the Creation and Consumption of Images*. Faber and Faber. London.
- Bayley, S. (1996) Creative Review. *Car* May 1996: 93.
- Bayley, S. (2011) Please check your wheels in at the door. *Car* March 2011: 60.
- BBC (British Broadcasting Corporation) (2010) Sir Clive Sinclair on 'elegant' electric vehicles. http://news.bbc.co.uk/1/hi/programmes/click_online/8781295.stm. Accessed 12/01/11.
- Beckmann, J. (2001) Automobility – a social problem and theoretical concept. *Environment and Planning D: Society and Space* 19(5) 593-607.
- Begley, J. & Berkeley, N. (2012) UK policy and the low carbon vehicle sector. *Local Economy* 27(7): 705-721.
- Benson, R., MacRury, I. & Marsh, P. (2007) *The Secret Life of Cars and What They Reveal About Us*. Not Actual Size/BMW (UK). London.
- Berkeley, N. (2012) The application of green technologies in the automotive industry: an assessment of policy attempts in the UK to stimulate the uptake of alternatively fuelled vehicles. *Regions Magazine* 288(1): 27-28.

8. References

Bijsterveld, K., Cleophas, E., Krebs, S. & Mom, G. (2014) *Sound and Safe: A History of Listening behind the Wheel*. Oxford University Press. New York.

Black, E. (2006) *Internal Combustion: How Corporations and Governments Addicted the World to Oil and Derailed the Alternatives*. St Martins Press. New York.

Blaikie, P.M. (1996) Post-modernism and global environmental change. *Global Environmental Change* 6(2): 81-85.

Blanco, S. (2008) *Tjaarda and HST International now taking orders for all electric Mustang and Shelby Cobra*. <http://green.autoblog.com/2008/04/17/tjaarda-and-hst-international-now-taking-orders-for-all-electric/> . Accessed 11/01/14.

BMW (Bayerische Motoren Werke) (2011) *Sustainable Value Report*. Bayerische Motoren Werke. Munich.

BMW (2013a) *BMW Electric Services: BMW Access*.
<http://bmwelectricpackages.atosb2b.com/services#services-bmw-access>. Accessed 15/07/14.

BMW (2013b) *BMW Group and Toyota Motor Corporation deepen collaboration by signing binding agreements*.
https://www.press.bmwgroup.com/pressclub/p/pcgl/pressDetail.html?title=bmw-group-and-toyota-motor-corporation-deepen-collaboration-by-signing-binding-agreements&outputChannelId=6&id=T0136503EN&left_menu_item=node_804. Accessed 21/10/13.

BMW (2011) BMW i3 Concept and BMW i8 Concept.
<http://www.youtube.com/watch?v=eJ3DzF5e9CM>. Accessed 22/01/13.

BMW UK (2012) The new BMW 1 Series TV ad.
http://www.youtube.com/watch?v=Wpe5NenqycI&list=PLs2yCPU2IVf-dcISRRo_OSSe8mqKilCk&index=9&feature=plpp_video. Accessed 22/01/12.

8. References

- BMW UK (2014a) *Electric. Sustainable. Urban. The new BMW i3*.
http://www.bmw.co.uk/en_GB/new-vehicles/bmw-i/i3/2013/start.html. Accessed 19/06/14.
- BMW UK (2014b) *The most progressive sports car. The BMW i8*.
http://www.bmw.co.uk/en_GB/new-vehicles/bmw-i/i8/2013/start.html. Accessed 19/06/14.
- Böhm, S., Jones, C., Land, C. & Paterson, M. (2006) Introduction: the Impossibilities of Automobility. In Böhm, S., Jones, C., Land, C. & Paterson, M. (Eds.) *Against Automobility*. Blackwell Publishing. Oxford.
- Bonner, F. (2010) Top Gear: why does the world's most popular programme not deserve scrutiny? *Critical Studies in Television: Scholarly Studies in Small Screen Fictions* 5(1): 32-45.
- Bordessa, R. (1993) Geography, postmodernism and environmental concern. *The Canadian Geographer* 37(2): 147-156.
- Brand Republic (2011) *Magazine ABCs: Top Gear extends car mags leadership as rivals drop*. <http://www.brandrepublic.com/news/1085538/magazine-abcs-top-gear-extends-car-mags-leadership-rivals-drop/>. Accessed 18/08/11.
- Brand Republic (2014) *Newspaper ABCs: Print circulations for 2014*.
<http://www.brandrepublic.com/news/1303361/Newspaper-ABCs-Print-circulations-June-2014/?DCMP=ILC-SEARCH>. Accessed 03/08/14.
- Bridge, G. (2011) Resource geographies 1: making carbon economies, old and new. *Progress in Human Geography* doi:10.1177/0309132510385524.
- British Gas (2013) *Free British Gas home charging solution when you buy a Renault ZOE*. <http://www.britishgas.co.uk/blog/articles/free-british-gas-home-charging-solution-when-you-buy-a-renault-zoe>. Accessed 27/07/13.

8. References

Brown, S. (1993) Postmodern marketing? *European Journal of Marketing* 27(4): 19-34.

Brown, S. (1997) Marketing science in a postmodern world: introduction to the special issue. *European Journal of Marketing* 31(3/4): 167-182.

Bryman, A. (2012) *Social Research Methods*. Oxford University Press. Oxford.

Bulgin, R. (1993) Frontline. *Car* June 1993: 58.

Car of the Year (2010) *Car of the Year 2011: Close win for Nissan Leaf*.

http://www.caroftheyear.org/winner/2011_1/coty. Accessed 16/10/13.

Car of the Year (2012) *Ampera/Volt sweeps on Car of the Year 2012*.

http://www.caroftheyear.org/winner/2012_1/coty. Accessed 16/10/13.

Carbon Tracker (2013) *Unburnable Carbon 2013: Wasted Capital and Stranded Assets*. <http://carbontracker.live.kiln.it/Unburnable-Carbon-2-Web-Version.pdf>.

Accessed 27/07/14.

CBS News (2010a) *Top Gear's Wild Ride*.

<http://www.cbsnews.com/video/watch/?id=6987703n&tag=mncol;lst;1>. Accessed 16/12/10.

CEC (Commission of European Communities) (1992) *Green Paper on the Impact of Transport on the Environment: a Community Strategy for 'Sustainable Mobility'*.

http://aei.pitt.edu/1235/01/transport_environment_gp_cOM_92_46.pdf. Accessed 05/01/11.

Cenex (2013) *Assessing the viability of EVs in everyday life*.

<https://www.innovateuk.org/documents/1524978/2138994/ULCV%2520Demonstrator%2520final%2520report> . Accessed 15/08/14.

8. References

- CfIT (Commission for Integrated Transport) (2004) *The Bus Industry: Encouraging Local Delivery*.
<http://webarchive.nationalarchives.gov.uk/20110304132839/http://cfit.independent.gov.uk/pubs/2004/busindustry/pdf/busindustry.pdf>. Accessed 10/01/14.
- Chandler, D. (2007) *Semiotics: the Basics*. Routledge. London.
- Clarkson, J. (2012) That funny noise is just Einstein under the bonnet. *Sunday Times In Gear Supplement* pp10-11.
- Clean Green Cars (2010) *Jargon Buster: Hybrids*.
[http://www.cleangreencars.co.uk/jsp/cgcmmain.jsp?lnk=801&featureid=504&description=Hybrids&category=Jargon Buster](http://www.cleangreencars.co.uk/jsp/cgcmmain.jsp?lnk=801&featureid=504&description=Hybrids&category=Jargon+Buster). Accessed 25/07/14.
- Coad, A., de Haan, P. & Woersdorfer, J.S. (2009) Consumer support for environmental policies: an application to purchases of green cars. *Ecological Economics* 68: 2078-2086.
- Coffey, D. & Thornley, C. (2012) Low carbon mobility versus private car ownership: towards a new business vision for the automotive world? *Local Economy* 27(7): 732-748.
- Colley, A., Griffiths, D., Hugh, M., Landers, K. & Jaggli, N. (1996) Childhood play and adolescent leisure preferences: associations with gender typing and the presence of siblings. *Sex Roles* 35(3-4): 233-245.
- Cook, J., Nuccitelli, D., Green, S.A., Richardsom, M., Winkler, B., Painting, R., Way, R., Jacobs, P. & Skuce, A. (2013) Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters* 8(2): 024024.
http://iopscience.iop.org/1748-9326/8/2/024024/pdf/1748-9326_8_2_024024.pdf.
[Accessed 07/04/15](#).
- Cooke, J. (2007) *Spinoza's 'Ethics': a Readers Guide*. Continuum. London.

8. References

Coope, J. (2008) The ecological blindspot in postmodernism. *New Formations* 64: 78-89.

Coventry City Council (2011) *Environmental advice for businesses*.
http://www.coventry.gov.uk/info/200105/sustainability/492/environmental_advice_for_businesses. Accessed 26/05/11.

Cresswell, T. & Uteng, T.P. (2008) Gendered mobilities: towards a holistic understanding. In Uteng, T.P. & Cresswell, T. (Eds.) *Gendered Mobilities*. Ashgate Publishing Limited. Aldershot. pp 1-12.

Cronin, A. (2008) Focus groups. In Gilbert, N. (Ed) *Researching Social Life*. Sage. London. pp 226-244.

Crutzen, P.J. & Steffen, W. (2003) How long have we been living in the anthropocene era? An editorial comment. *Climatic Change* 61(3): 251-257.

Cuff, E.C., Sharrock, W.W. & Francis, D.W. (2006) *Perspectives in Sociology*. Routledge. London.

Dalby, S. (2007) Anthropocene geopolitics: globalisation, empire, environment and critique. *Geography Compass* 1(1) 103-118.

Dant, T. (2001) *Contradictions of the Car*. Presented to Mobilities Group, Department of Sociology, Lancaster University, 17th May 2001.
<http://www.lancs.ac.uk/staff/dant/contradictions%20of%20the%20car.pdf>. Accessed 02/10/10.

Dant, T. (2004) The driver-car. *Theory, Culture & Society* 21(4/5): 61-79.

Dant, T. & Martin, P.J. (1999) By Car: Carrying Modern Society. In Gronow, J. & Warde, A. (Eds.) *Ordinary Consumption*. Routledge. London. pp 143-158.
<http://www.lancs.ac.uk/staff/dant/by%20car.pdf>. Accessed 02/10/10.

8. References

- DECC (Department for Energy and Climate Change) (2011) *Digest of UK Energy Statistics 2011*. <http://www.decc.gov.uk/assets/decc/11/stats/publications/dukes/2329-statistical-press-release.pdf>. Accessed 28/07/11.
- de Leuw, E. (2008) Self-administered questionnaires and standardized interviews. In Clifford, N., French, S. & Valentine, G. (Eds) *Key Methods in Geography*. Sage. London. pp 313-327.
- Deleuze, G. (1988) *Spinoza: Practical Philosophy* (translated by Robert Hurley). City Lights. San Francisco.
- Deleuze, G. & Guattari, F. (2004) *A Thousand Plateaus: Capitalism and Schizophrenia*. Continuum. London.
- Demirbas, A. (2010) Use of algae as biofuel sources. *Energy Conversion and Management* 51(12): 2738-2749.
- Demirbas, M.F. (2011) Biofuels from algae for sustainable development. *Applied Energy* 88(10): 3473-3480.
- DfT (Department for Transport) (2006) *Attitudes to Car Use*. <http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/adobepdf/162469/21412/221513/222698/attocaruse>. Accessed 01/11/10.
- DfT (2010) *OLEV Plug-in Car Grant*. <http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/sustainable/olev/grant/>. Accessed 05/01/11.
- DfT (2012) *Plug-in car grant extended to vans*. <http://www.dft.gov.uk/news/press-releases/dft-news-20120117>. Accessed 17/01/12.
- Dijk, M. & Yarime, M. (2010) The emergence of hybrid-electric cars: innovation path creation through co-evolution of supply and demand. *Technological Forecasting and Social Change* 77: 1371-1390.

8. References

- Dunn, J. & Tobin, D. (2012) The holes in our electric dream. *Sunday Times In Gear Supplement* 19/08/12 pp4-5).
- Dustmann, C-H. (2004) Advances in ZEBRA batteries. *Journal of Power Sources* 127: 85-92.
- EC (European Commission) (2002) *Study on Emission Control for Heavy Duty Vehicles. Final Report volume 1: Survey of Future Emission Control Techniques*.
http://ec.europa.eu/enterprise/sectors/automotive/files/pagesbackground/emission_control/vol_1-emission_control_technology_en.pdf. Accessed 31/07/11.
- EC (2010) *Euro 5 and Euro 6 – emissions from light duty vehicles*.
http://ec.europa.eu/enterprise/sectors/automotive/environment/euro5/index_en.htm. Accessed 31/07/11. (10/01/14)
- EC (2011a) *Reducing emissions from transport*.
http://ec.europa.eu/clima/policies/transport/index_en.htm. Accessed 25/07/11.
- EC (2011b) (2014) *Reducing CO2 emissions from passenger cars*.
http://ec.europa.eu/clima/policies/transport/vehicles/cars/index_en.htm. Accessed 10/01/14.
- Ecotricity (2013) *Our Electric Highway*. <http://www.ecotricity.co.uk/for-the-road/our-electric-highway>. Accessed 27/07/13.
- Edensor, T. (2004) Automobility and national identity: representation, geography and driving practice. *Theory, Culture and Society* 21(4/5): 101-120.
- Elkington, J. (1999) *Cannibals with forks: the Triple Bottom Line of 21st Century Business*. Capstone. Oxford.
- Elliott, A. (2009) *Contemporary Social Theory*. Routledge. Oxford.

8. References

- English, A. (2012a) It's big but not clever. *Daily Telegraph Motoring Supplement* 21/01/12 pp10-11.
- English, A. (2012b) Will customers do enough miles to justify the price? *Daily Telegraph Motoring Supplement* 21/01/12 p10.
- English, A. (2012c) Magnificent seven. *Daily Telegraph Motoring Supplement* 03/03/12 pp2-3.
- Ernst, C-S., Hackbarth, A., Madlener, R., Lunz, B. & Sauer, D.U. (2011) Battery sizing for serial plug-in hybrid vehicles: a model-based analysis for Germany. *Energy Policy* 30(10): 5871-5882.
- EU (European Union) (2006) *CO₂ emissions from new cars down by 12% since 1995*. <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1134>. Accessed 03/07/13.
- EU (2009) *Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles*. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0001:0015:EN:PDF>. Accessed 24/07/13.
- EU (2011) Analysing on-road emissions of light-duty vehicles with Portable Emission Measurement Systems (PEMS). http://ec.europa.eu/clima/policies/transport/vehicles/docs/2011_pems_jrc_62639_en.pdf. Accessed 06/04/13.
- EurActive (2013) *Air pollution puts UK in the dock and Europe in the red*. <http://www.euractiv.com/climate-environment/air-pollution-puts-uk-dock-europ-news-518312>. Accessed 25/07/13.

8. References

- Firnkorn, J. & Müller, M. (2011) What will be the environmental effects of new free-floating car-sharing systems? The case of car2go in Ulm. *Ecological Economics* 70: 1519-1528.
- Fleet News (2012) *BUDGET: Benefit-in-kind CO2 bands by tax year*.
<http://www.fleetnews.co.uk/news/2012/3/22/budget-benefit-in-kind-co2-bands-by-tax-year/42993/>. Accessed 27/07/13.
- FoE (2011) *Biofuels in 2011: a briefing on the current state of biofuel policy in the UK and ways forward*.
http://www.foe.co.uk/sites/default/files/downloads/biofuels_in_2011_gathering.pdf .
Accessed 10/01/14.
- Foster, H. (1984) (Post)modern polemics. *New German Critique* 33 Fall 67-78.
- Fountain, G (2009) Got 'em! The key cars of 2009: Citroën C3 Picasso. *Car* January 2009 pp 128-132.
- Francis, B. (2010) Gender, toys and learning. *Oxford Review of Education* 36(3): 325-344.
- Frankel, A. (2012) Who's leader of the battery pack? *Sunday Times In Gear Supplement* 25/03/13 pp6-7.
- Gabriel, Y. & Lang, T. (2006) *The Unmanageable Consumer: Contemporary Consumption and its Fragmentations*. Sage. London.
- Gandy, M. (1996) Crumbling land: the postmodernity debate and the analysis of environmental problems. *Progress in Human Geography* 20(1): 23-40.
- Gare, A.E. (1995) *Postmodernism and the Environmental Crisis*. Routledge. London.
- Gartman, D. (2004) Three ages of the automobile: the cultural logics of the car. *Theory, Culture and Society* 21(4/5): 169-195.

8. References

- Garud, R & Gehman, J. (2012) Metatheoretical perspectives on sustainable journeys: evolutionary, relational and durational. *Research Policy* 41(6): 980-995.
- Gibson, K. (2012a) Hybrid white lion meets hybrid white lions. *Sun Motors Supplement* pp4-5.
- Gibson, K. (2012b) European chAMP. *Sun Motors Supplement* 23/03/12 pp4-5.
- Gibson, K. (2012c) We give the Twizy a twirl. *Sun Motors Supplement* 06/04/14 pp4-5.
- Gill, S.S., Tsolakis, A., Dearn, K.D. & Rodríguez-Fernández, J. (2011) Combustion characteristics and emissions of Fischer-Tropsch diesel fuels in IC engines. *Progress in Energy and Combustion Science* 37(4): 503-523.
- Gjøen, H. & Hård, M. (2002) Cultural politics in action: developing user scripts in relation to the electric vehicle. *Science, Technology and Human Values* 27(2): 262-281.
- Glennie, P. & Thrift, N. (1992) Modernity, urbanism and modern consumption. *Environment and Planning D: Society and Space*. 10(4): 423-443.
- Glott-Richter, M. (2012) Car-sharing – “car-on-call” for reclaiming street space. *Procedia – Social and Behavioural Sciences* 48: 1454-1463.
- GoinGreen (2011) *Love G-Whiz: the original EV*.
<http://www.goingreen.co.uk/store/content/lovegwiz>. Accessed 05/08/11.
- Golding, R. (1979) *Mini*. Osprey Publishing. London.
- Gomm, R. (2009) *Key Concepts in Social Research Methods*. Palgrave MacMillan. Basingstoke.
- Goodwin, K.J. (2010) Reconstructing automobility: the making and breaking of modern transportation. *Global Environmental Politics* 10(4): 60-78.

8. References

- Government of India (2012) *National Electric Mobility Mission Plan 2020*.
<http://dhi.nic.in/NEMMP2020.pdf>. Accessed 23/07/13.
- Graves-Brown, P. (1997) From highway to superhighway: the sustainability, symbolism and situated practices of car culture. *Social Analysis* 41(1): 64-75.
- Green, G. (2010a) Why Badge Engineering Sucks. *Car* 26/01/10
<http://www.carmagazine.co.uk/Community/Car-Magazines-Blogs/Gavin-Green-Blog/Why-badge-engineering-sucks/>. Accessed 17/02/11.
- Green, G. (2010b) *The Car is Still the Star*. Coventry Conversations 11th May 2010. Coventry University.
<http://coventryuniversity.podbean.com/?s=the+car+is+still+the+star>. Accessed 13/10/10.
- Grubb, E.L. & Hupp, G. (1968) Perception of the self, general stereotypes and brand selection. *Journal of Marketing Research* 5: 58-63.
- Gunn, S. (2013) People and the car: the expansion of automobility in urban Britain, c.1955-70. *Social History* 38(2): 220-237.
- Hammond, R. (2011) Formula Fun: F1 prof designs electric sports car. *Daily Mirror* 30/09/11 p61.
- Hammond, R. (2012) Watts all the fuss? *Daily Mirror* 02/03/12 pp61-62.
- Hammond, R. (2012b) Mor for the future: historic firm plugs into fresh ideas. *Daily Mirror* 16/03/12 p53.
- Hammond, R. (2012c) Negative in-Fluence: bland electric Renault fails to make sparks fly. *Daily Mirror* 16/03/12 pp54-55.
- Hammond, R. (2012d) Pull the plug-in. *Daily Mirror* 23/03/12 p.62.

8. References

- Hammond, R. (2012e) Let's Twizy and shout. *Daily Mirror* 11/05/13pp60-61.
- Hammond, R. (2012f) Fun Merc's Electric. *Daily Mirror* 05/10/12 p60.
- Hammond, R. (2012g) Leafs set lap record. *Daily Mirror* 07/12/12 p.71.
- Hammond, R. (2012h) Perfect 10 for 2013. *Daily Mirror* 28/12/12 p59.
- Hanlon, M. (2011) *Sorry, but electric cars are a waste of space*.
<http://www.dailymail.co.uk/sciencetech/article-2022648/Sorry-electric-cars-waste-space.html>. Accessed 30/05/14.
- Hannigan, J. (2006) *Environmental Sociology*. Routledge. Abingdon.
- Harada, T. & Waitt, G. (2013) Researching transport choices: the possibilities of 'mobile methodologies' to study life-on-the-move. *Geographical Research* 51(2): 145-152.
- Harrington, S. (2010) Top Gear, top journalism: three lessons for political journalists from the world's most popular TV show. *Continuum: Journal of Media & Cultural Studies* 26(6): 933-942.
- Harvey, C. (1993) *Mighty Mini*. Haynes Publishing. Sparkford.
- Harvey, D. (1990) *The Condition of Postmodernity*. Blackwell Publishing. Malden.
- Hassan, I. (2003) Beyond postmodernism: toward an aesthetic of trust. *Angelaki: Journal of the Theoretical Humanities* 8(1): 3-11.
- Hawkins, R. (1986) A road not taken: sociology and the neglect of the automobile. *California Sociologist* 8: 61-79.

8. References

- Hawkins, T.R., Singh, B., Majeau-Bettez, G. & Strømman, A.H. (2013) Comparative environmental life cycle assessment of conventional and electric vehicles. *Journal of Industrial Ecology* 17(1): 53-64.
- Hawkins, E., Edwards, T. & McNeall, D. (2014) Pause for thought. *Nature Climate Change* 4(3): 154-156.
- Heffner, R.R., Kurani, K.S. & Turrentine, T.S. (2007) Symbolism in California's early market for hybrid electric vehicles. *Transportation Research Part D: Transport and Environment* 12(6): 396-413.
- Henning, D. (1998) Cars and girls – the car, masculinity and pop music. In Thoms, D., Holden, L. & Claydon, T. (Eds.) *The Motor Car and Popular Culture in the 20th Century*. Ashgate Publishing Limited. Aldershot. pp 96-117.
- Hewer, P. & Brownlie, D. (2007) Cultures of consumption of car *aficionados*: Aesthetics and consumption communities. *International Journal of Sociology and Social Policy* 27(3/4): 106-119.
- HMRC (Her Majesty's Revenue and Customs) (2014) *Company car and car fuel benefit calculator*. <http://www.hmrc.gov.uk/calcs/cars.htm>. Accessed 27/05/14.
- Holden, L. (1998) More than a Marque. The Car as Symbol: Aspects of Culture and Ideology. In Thoms, D., Holden, L. & Claydon, T. (Eds.) *The Motor Car and Popular Culture in the 20th Century*. Ashgate. Aldershot. pp 28-40.
- Holmén, B.A. & Niemeier, D.A. (2003) Air quality. In Henscher, D.A. & Button K.J. (Eds.) *Handbook of Transport and the Environment*. Elsevier. Oxford. pp 61-79.
- Honda (2011) *The Honda hybrid system: the engine is the main power source*. <http://world.honda.com/automobile-technology/IMA/detail/>. Accessed 04/08/11.

8. References

- Horiba, T., Maeshima, T., Matsumura, T., Koseki, M., Arai, J. & Muranaka, Y. (2005) Applications of high power density lithium ion batteries. *Journal of Power Sources* 146(1/2): 107-110.
- Holt-Jensen, A. (2009) *Geography: History and Concepts. A Students Guide*. Sage. London.
- Humphrey, G. (1924) The psychology of the Gestalt. *The Journal of Educational Psychology* 15(7): 401-412.
- IMCDB (Internet Movie Car Database) *Home page*. <http://www.imcdb.org/>. Accessed 07/09/14.
- Ingold, T. (2006) Rethinking the animate, re-animating thought. *Ethnos* 71(1): 9-20.
- IPCC (Intergovernmental Panel on Climate Change) (2007) Summary for Policymakers. In Solomon, S., Qin, D., Manning, M., Marquis, M., Averyt, K., Tignor, M.M.B., Miller, H.L. & Chen, Z. (Eds.) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge. pp 1-18.
- Ivory, C. & Genus, A. (2010) Symbolic consumption, signification and the 'lockout' of electric cars, 1885-1914. *Business History* 52(7): 1107-1122.
- Jameson, F. (1984) Postmodernism, or the cultural logic of late capitalism. *New Left Review* 146: 53-92.
- Jeremiah, D. (2007) *Representations of British Motoring*. Manchester University Press. Manchester.
- Johansson, B. (2003) Transportation fuels – a system perspective. In Henscher, D.A. & Button K.J. (Eds.) *Handbook of Transport and the Environment*. Elsevier. Oxford. pp 141-157.

8. References

- Johnston, R.J. & Sidaway, J.D. (2004) *Geography and Geographers: Anglo-American Human Geography Since 1945*. Arnold. London.
- Kershaw, J.E. (2006) *Making your Marque: the Societal Semiotics of the Car*. Unpublished BSc dissertation. Manchester Metropolitan University.
- Kershaw, J.E. (2007) *Going to the Match: Reducing Football's Ecological Footprint by Pursuing a Modal Shift in Supporter Transport*. Unpublished MSc thesis. Manchester Metropolitan University.
- Khan Ribeiro, S., Kobayashi, S., Beuthe, M., Gasca, J., Green, D., Lee, D.S., Muromachi, Y., Newton, P.J., Plotkin, S., Sperling, D, Wit, R. & Zhou, P.J. (2007) Transport and its infrastructure. In Metz, B., Davidson, O.R., Bosch, P.R., Dave, R. & Meyer, L.A. (Eds.) *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge. pp 323-385.
- Khare, M. & Sharma, P. (2003) Fuel options. In Henscher, D.A. & Button, K.J. (Eds.) *Handbook of Transport and the Environment*. Elsevier. Oxford. pp. 159-183.
- Knox, P. & Pinch S. (2000) *Urban Social Geography: an Introduction*. Pearson Education. Harlow.
- Kojima, T., Ishuzu, T., Horiba, T. & Yoshikawa, M. (2009) Development of lithium-ion battery for fuel cell hybrid electric vehicle application. *Journal of Power Sources* 189(1): 859-863.
- Kreutz, T.G., Larson, E.D., Liu, G. & Williams, R.H. (2008) *Fischer-Tropsch Fuels from Coal and Biomass*. <http://mitei.mit.edu/system/files/kreutz-fischer-tropsch.pdf> . Accessed 11/01/14.

8. References

- Kroft, S. (2010) The Secret Behind the Hit TV Car Show "Top Gear".
<http://www.cbsnews.com/stories/2010/10/21/60minutes/main6978679.shtml?tag=currentVideoInfo;segmentTitle>. Accessed 06/12/10.
- Kronenberg, J. (2007) Making consumption "reasonable". *Journal of Cleaner Production* 15: 557-566.
- Laird, J. (2011) Peugeot i0n. *iCAR Magazine* 1: 49.
- Lane, B. (2011) *Market Delivery of Ultra-Low Carbon Vehicles*. RAC Foundation. London.
- Lave, L.B. & Griffin, W.M. (2008) The economic and environmental footprints of transportation. In Kutz, M. (Ed.) *Environmentally Conscious Transportation*. Wiley. Hoboken NJ. pp 1-13.
- Llewellyn, R. (2011) Leaf Year. *iCAR Magazine* 1: 64-68.
- Longhurst, R. (2010) Semi-structured interviews and focus groups. In Clifford, N., French, S. & Valentine, G. (Eds) *Key Methods in Geography*. Sage. London. pp 103-115.
- Lorimer, H. (2008) Cultural geography: non-representational conditions and concerns. *Progress in Human Geography* 32: 551-559.
- Lyotard, J-F (1984) *The Postmodern Condition: A Report on Knowledge*. University of Minnesota Press. Minneapolis.
- Mahindra Reva (2004) *REVA drive electric: specifications*.
<http://www.revaindia.com/specifications.html>. Accessed 05/08/11.
- Martin, W. & Bjørkdahl, K. (2011) Arne Dekke Eide Naess. *Inquiry* 54(1): 1.

8. References

- Massumi, B. (2002) *Parables for the Virtual: Movement, Affect, Sensation*. Duke University Press. Durham NC.
- Matthewman, S. & Hoey, D. (2006) What happened to postmodernism? *Sociology* 40(3): 529-547.
- Maxwell, S. (2001) Negotiations of car use in everyday life. In Miller, D. (Ed.) *Car Cultures*. Berg. Oxford. pp 203-222.
- McCarthy, T. (2007) *Auto Mania: Cars, Consumers and the Environment*. Yale University Press. New Haven.
- McCormack, D.P. (2003) An event of geographical ethics in spaces of affect. *Transactions of the Institute of British Geographers* 28: 488-507.
- McCormack, D.P. (2005) Diagramming practice and performance. *Environment and Planning D: Society and Space* 23(1): 119-147.
- McCracken, G. (1986) Culture and consumption: a theoretical account of the structure and movement of the cultural meaning of consumer goods. *Journal of Consumer Research* 13: 71-84.
- McLafferty, S.L. (2010) Conducting questionnaire surveys. In Clifford, N., French, S. & Valentine, G. (Eds) *Key Methods in Geography*. Sage. London. pp 77-88.
- McMorrin, F., Anderson, R., Featherstone, I & Watson, C. (2012) *Plugged-in Fleets: a Guide to Deploying Electric Vehicles in Fleets*.
http://www.cenex.co.uk/wp-content/uploads/2014/02/EV_report_final_forweb.pdf.
Accessed 28/05/14.
- McNamara, P. (2011) *Toyota Prius Plug-in Hybrid (2011) CAR review*.
<http://www.carmagazine.co.uk/Drives/Search-Results/First-drives/Toyota-Prius-Plug-in-Hybrid-2011-CAR-Review/>. Accessed 04/08/11.

8. References

- Meadows, B. & Sayer, P. (2013) The Mexican sports car controversy: an appraisal of BBC's Top Gear and the reproduction of nationalism and racism through humour. *Discourse, Context & Media* 2(2): 103-110.
- Mediaweek (2014) *Magazine ABCs: Top 100 at a glance*.
<http://www.mediaweek.co.uk/article/1280860/magazine-abcs-top-100-glance> .
Accessed 03/08/14.
- Merriman, P. (2009) Automobility and the geographies of the car. *Geography Compass* 3(2): 586-599.
- Meyer, I., Kaniovski, S. & Scheffran, J. (2011) Scenarios for regional passenger car fleets and their CO2 emissions. *Energy Policy* 41: 66-74.
- Mikler, J. (2010) Apocalypse now or business as usual? Reducing the carbon emissions of the global car industry. *Cambridge Journal of Regions, Economy and Society* 3: 407-436.
- Miller, D. (Ed.) (2001) *Car Cultures*. Berg. Oxford.
- Mom, G. (2004) *The Electric Vehicle: Technology and Expectations in the Automobile Age*. The John Hopkins University Press. Baltimore MD.
- Motavalli, J. (2001) *Forward Drive: the Race to Build the Clean Car of the Future*. Earthscan Publications. London.
- Nealon, J.T. (2012) *Post-postmodernism, or the Cultural Logic of Just-in-Time Capitalism*. Stanford University Press. Stanford.
- Nieuwenhuis, P. (2008) From banger to classic – a model for sustainable car consumption? *International Journal of Consumer Studies* 32(6): 648-655.
- Nieuwenhuis, P. & Wells, P. (2003) *The Automotive Industry and the Environment*. Woodhead Publishing Limited. Cambridge.

8. References

- Nissan UK (2012a) Nissan Leaf: 10,000 miles for £186.
<http://www.youtube.com/watch?v=WQrKXldRlsQ>. Accessed 22/01/13.
- Nissan UK (2012b) *Nissan Juke: Built to Thrill*.
http://www.youtube.com/watch?v=XGftJ9brDiM&list=PL2C59049F28D8B580&index=4&feature=plpp_video. Accessed 22/01/13.
- O'Brien, K. (2010) Responding to environmental change: a new age for human geography? *Progress in Human Geography* 35(4): 542-549.
- O'Sullivan, T. (1998) Transports of difference and delight: advertising and the motor car in twentieth century Great Britain. In Thoms, D., Holden, L. & Claydon, T. (Eds.) *The Motor Car and Popular Culture in the 20th Century*. Ashgate. Aldershot. pp 287-303.
- OECD (Organisation for Economic Co-operation and Development) (1993) *Cars and Climate Change*. OECD. Paris.
- OED (Oxford English Dictionary) (2015) *Culture*.
<http://www.oed.com/view/Entry/45746?rskey=ZRHq6S&result=1&isAdvanced=false#eid>. Accessed 19/06/15.
- OLEV (Office for Low Emission Vehicles) (2013a) *About us*.
<https://www.gov.uk/government/organisations/office-for-low-emission-vehicles/about> . Accessed 10/09/14.
- OLEV (2013b) *Plug-in Car Grant*. <https://www.gov.uk/government/publications/plug-in-car-grant>. Accessed 10/01/14.
- OLEV (2013c) *New measures announced to support the uptake of plug-in vehicles*.
<https://www.gov.uk/government/news/new-measures-announced-to-support-the-uptake-of-plug-in-vehicles>. Accessed 27/07/13.

8. References

- OLEV (2014) Investing in ultra-low emission vehicles in the UK 2015-2020.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307019/ulev-2015-2020.pdf. Accessed 27/05/14.
- Oliver, B. (2012) The best is yet to come. *Daily Telegraph Motoring Supplement* 10/11/12 p.2-3.
- Olson, E.L. & Thjømmøe, H.M. (2010) How bureaucrats and bean counters strangled General Motors by killing its brands. *Journal of Product and Brand Management* 19(2): 103-113.
- Orsato, R.J. & Wells, P. (2007) U-turn: the rise and demise of the automobile industry. *Journal of Cleaner Production* 15(11-12): 994-1006.
- Orstao, R.J., Dijk, M., Kemp, R. & Yarime, M. (2012) The electrification of automobility: the bumpy ride of electric vehicles toward regime transition. In Geels, F.W., Kemp, R., Dudley, G. & Lyons, G. (Eds.) *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. Routledge. London. pp 205-228.
- Ovshinsky, S.R., Fetcenko, M.A. & Ross, J. (1993) A nickel metal hydride battery for electric vehicles. *Science* 260(5105): 176-181.
- Parissien, S. (2013) *The Life of the Automobile: a New History of the Car*. Atlantic Books. London.
- Pile, S. (2010) Emotions and affect in recent human geography. *Transactions of the Institute of British Geographers* 35: 5-20.
- POD Point (2013) *POD Point home page*. <http://www.pod-point.com/>. Accessed 24/07/13
- Pollard, T. (2010) *Nissan Leaf is European Car of the Year 2011*.
<http://www.carmagazine.co.uk/News/Search-Results/Industry-News/Nissan-Leaf-is-European-Car-of-the-Year-2011/>. Accessed 06/12/10.

8. References

- Pollard, T. (2012) *Toyota Prius Plug-in (2012) priced from £27,895*.
<http://www.carmagazine.co.uk/News/Search-Results/First-Official-Pictures/Toyota-Prius-Plug-In-2012-priced-from-27895/> . Accessed 16/10/13.
- Pooley, C., Turnbull, J. & Adams, M. (2006) The impact of new transport technologies on intraurban mobility: a view from the past. *Environment and Planning A* 38(2): 253-267.
- Potter, S. (2003) Transport energy and emissions: urban public transport. In Henscher, D.A. & Button, K..J. (Eds.) *Handbook of Transport and the Environment*. Elsevier. Oxford. pp247-262.
- Press Gazette (2011) National ABCs: Daily Star sees biggest drop.
<http://www.pressgazette.co.uk/story.asp?sectioncode=1&storycode=48050&c=1>. Accessed 21/10/11.
- PSA (Peugeot Soci  t   Anonime) (2010) *Production: the Sites*. PSA Peugeot. Paris.
http://www.psa-peugeot-citroen.com/en/psa_group/sites_b4.php. Accessed 05/04/11.
- Redshaw, S. (2008) *In the Company of Cars: Driving as a Social and Cultural Practice*. Ashgate. Aldershot.
- Renault UK (2014) *Renault Environment* <http://www.renault.co.uk/cars/environment/>. Accessed 10/02/14.
- Renault UK (2011) *The Megane Experiment – Best of the Gisburn Test Drives*.
<http://www.youtube.com/watch?v=AtkVL-R25SM&feature=related>. Accessed 22/01/13.
- Renault ZE (2011) *The Electric Life*. http://www.youtube.com/watch?v=qKg-LPOXIMs&list=PL4C9BC4251341E716&index=3&feature=plpp_video. Accessed 22/01/13.

8. References

- Riordan, C. (2001) Johann Wolfgang von Goethe 1749-1832. In Palmer, J.A. (Ed.) *Fifty Key Thinkers on the Environment*. Routledge. Abingdon. pp 63-69.
- Riversimple (2014) *Welcome to Riversimple*. <http://riversimple.com/>. Accessed 12/06/14.
- RMBC (Rochdale Metropolitan Borough Council) (2011) *Sustainability*. http://www.rochdale.gov.uk/environment_and_planning/sustainability.aspx. Accessed 26/05/11.
- Rogers, H. (2010) *Green Gone Wrong: How our Economy is Undermining the Environmental Revolution*. Verso. London.
- Romm, J. (2006) The car and the fuel of the future. *Energy Policy* 34: 2609-2614.
- Royle, N. (2003) *Jaques Derrida*. Routledge. London.
- Ruddick, S. (2010) The politics of affect: Spinoza in the works of Negri and Deleuze. *Theory, Culture and Society* 27(4): 21-45.
- Rutherford, M. (2012a) A short circuit test awaits the Leaf. *Daily Telegraph Motoring Supplement* 17/03/12 p8.
- Rutherford, M. (2012b) EVs are just not economical. *Daily Telegraph Motoring Supplement* 02/06/12 p10.
- Rutherford, M. (2012c) You can't beat petrol or diesel. *Daily Telegraph Motoring Supplement* 08/09/12 p8.
- Rutherford, M. (2012d) Time to park up and move on. *Daily Telegraph Motoring Supplement* 29/09/12 p9.
- Rutherford, M. (2012e) Motormouth. *Sunday Times Drive Supplement* 07/10/12 p3.

8. References

Sachs, W. (1992) *For the Love of the Automobile: Looking Back into the History of our Desires*. University of California Press. Berkeley; Oxford.

Samuels, A. (2002) Accidents: the car and literature. In Wollen, P. & Kerr, J. (Eds.) *Autopia: Cars and Culture*. Reaktion Books. London. pp 50-58.

Sayle, A. (2012) Citroën sparks into life. *Daily Telegraph Motoring Supplement* 14/01/12 pp2-3.

Scharff, V. (1991) *Taking the Wheel: Women and the Coming of the Motor Age*. Free Press. New York.

Schipper, L. (2011) Automobile use, fuel economy and CO2 emissions in industrialised countries: encouraging trends through 2008? *Transport Policy* 18: 358-372.

Schipper, L.J. & Fulton, L. (2003) Carbon dioxide emissions from transportation: trends, driving factors and forces for change. In Henscher, D.A. & Button, K..J. (Eds.) *Handbook of Transport and the Environment*. Elsevier. Oxford. pp 203-335.

Schuitema, G., Anable, J., Skippon, S. & Kinnear, N. (2013) The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A* 48: 39-49.

Science Museum (2011) *Ford Comuta electric car, 1967*.
<http://www.sciencemuseum.org.uk/images/ManualSSPL/10221430.aspx>. Accessed 05/08/11.

Scruton, R. (1999) *Spinoza*. Routledge. New York.

SDC (Sustainable Development Commission) (2006) *I Will if You Will: Towards Sustainable Consumption*. http://www.sd-commission.org.uk/publications/downloads/I_Will_If_You_Will.pdf. Accessed 05/01/11.

8. References

- Seippel, Ø (1999) Political environmentalism: class interests, modern values or postmodern feelings? *Innovation: the European Journal of Social Sciences* 12(2): 129-153.
- Setright, L. J. K. (2003) *Drive On! A Social History of the Motor Car*. Granta Books. London.
- Shaheen, S., Sperling, D. & Wagner, C. (1999) A short history of car-sharing in the 90's. *The Journal of World Transport Policy & Practice* 5(3): 18-40.
- Shawver, L (1998) Postmodernizing the unconscious with the help of Derrida and Lyotard. *The American Journal of Psychoanalysis* 58(4): 361-390.
- Sheller, M. (2004) Automotive emotions: feeling the car. *Theory, Culture and Society* 21(4/5): 221-242.
- Sheller, M. (2007) Bodies, cybercars and the mundane incorporations of automated mobilities. *Social & Cultural Geography* 8(2): 175-195.
- Sheller, M. & Urry, J. (2000) The city and the car. *International Journal of Urban and Regional Research* 24(4): 727-757.
- Shirouzu, N., Kubota, Y. & Lienert, P. (2013) *Insight – Electric cars head towards another dead end*. <http://uk.reuters.com/article/2013/02/04/uk-autos-electric-hydrogen-idUKBRE91304X20130204>. Accessed 30/05/14.
- Simister, J. (2010) Nissan Leaf: Car of the Year. *The Independent* 05/12/10. <http://www.independent.co.uk/life-style/motoring/motoring-news/nissan-leaf-car-of-the-year-2151455.html>. Accessed 06/12/10.
- Simister, J. (2011) Open range. *iCAR Magazine* 1: 54-61.
- Simmons, G. (2008) Marketing to postmodern consumers: introducing the internet chameleon. *European Journal of Marketing* 42(3/4): 299-310.

8. References

- Simmons, R. (2008) Questionnaires. In Gilbert, N. (Ed) *Researching Social Life*. Sage. London. pp 182-205.
- Simms, C.D. & Trott, P. (2006) The perceptions of the BMW Mini brand: the importance of historical associations and the development of a model. *Journal of Product and Brand Management* 15(4): 228-238.
- Sin, C.H. (2003) Interviewing in 'place': the socio-spatial construction of interview data. *Area* 35(3): 305-312.
- Sloman, L. (2006) *Car Sick: Solutions for our Car-addicted Culture*. Green Books. Totnes.
- Slovic, P., Finucane, M.L.; Peters, E. & MacGregor, D.G. (2007) The affect heuristic. *European Journal of Operational Research* 177(3): 1333-1352.
- Smith, A., Granda, C. & Holtzapple, M. (2008) Biofuels for transportation. In Kutz, M. (Ed.) *Environmentally Conscious Transportation*. Wiley. Hoboken NJ. pp 213-256.
- Smith, R.G. (2003) Baudrillard's nonrepresentational theory: burn the signs and journey without maps. *Environment and Planning D: Society and Space* 21: 67-84.
- Smithson, J. (2008) Focus groups. In Alasuutari, P., Bickman, L. & Brannen, J. (Eds) *The SAGE Handbook of Social Research Methods*. Sage. London. pp 357-370.
- SMMT (Society of Motor Manufacturers and Traders) (2010a) *Low carbon development holds key to stable fleet volumes in 2011*.
<http://www.smmmt.co.uk/articles/article.cfm?articleid=22697>. Accessed 18/11/10.
- SMMT (2010b) *11th Annual Sustainability Report: 2009 Data*.
<http://www.smmmt.co.uk/downloads/eleventh-Sustainability-Report.pdf>. Accessed 13/02/11.

8. References

- SMMT (2012) *New Car CO₂ Report 2012: the 11th Report*. <http://www.smmt.co.uk/wp-content/uploads/SMMT-New-Car-CO2-Report-2012.pdf>. Accessed 18/04/12.
- SMMT (2013) *Motor Industry facts 2013*. <http://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-2013-Motor-Industry-Facts-guide.pdf>. Accessed 18/11/13.
- SMMT (2014) *Motor Industry Facts 2014*. http://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT_Facts-Guide_May.pdf. Accessed 27/05/14.
- Sokal, A. D. (1996) Transgressing the boundaries: toward a transformative hermeneutics of quantum gravity. *Social Text* 46/47: 217-252.
- Solomon, S., Qin, D., Manning, M., Marquis, M., Averyt, K., Tignor, M.M.B., Miller, H.L. & Chen, Z. (Eds.) (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge.
- Spinoza, B. (1996 [1677]) *Ethics*. Penguin Books. London.
- Stainton-Rogers, W. (2006) Logics of Enquiry. In Potter, S. (Ed) *Doing Postgraduate Research*. Sage. London. pp 73-91.
- Steg, L. (2005) Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice* 39(2/3): 147-162.
- Steuer, D. (2002) In defence of experience: Goethe's natural investigations and scientific culture. In Sharpe, L. (Ed.) *The Cambridge Companion to Goethe*. Cambridge University Press. Cambridge. pp 160-178.
- Stewart, K. (2007) *Ordinary Affects*. Duke University Press. Durham NC.
- Stinchcombe, A.L. & Heimer, C.A. (2000) Retooling for the next century: sober methods for studying the subconscious. *Contemporary Sociology* 29 (2): 309-319.

8. References

- Storey, J. (2006) *Cultural Theory and Popular Culture: an Introduction*. Pearson. Harlow.
- Sui, D.Z. (1999) Postmodern urbanism disrobed: or why postmodern urbanism is a dead end for urban geography. *Urban Geography* 20(5): 403-411.
- Svens, P., Lindstrom, J., Gelin, O., Behm, M. & Lindbergh, G. (2011) Novel field test equipment for lithium-ion batteries in hybrid electrical vehicle applications. *Energies* 4(5): 741-757.
- Swallow, N. (1993) Ad Venture. *Car* March 1993: 110-113.
- T&E (Transport & Environment) (2013) *Mind the Gap! Why official car fuel economy figures don't match up to reality*.
http://www.transportenvironment.org/sites/te/files/publications/Real%20World%20Fuel%20Consumption%20v15_final.pdf. Accessed 06/04/14.
- Takeshita, T. & Yamaji, K. (2008) Important roles of Fischer-Tropsch synfuels in the global energy future. *Energy Policy* 36(8): 2773-2784.
- Technology Strategy Board (2011) *Initial Findings from the Ultra Low Carbon Vehicle Demonstrator Programme: How quickly did users adapt?*
<https://www.innovateuk.org/documents/1524978/1814792/Initial+Findings+from+the+Ultra+Low+Carbon+Vehicle+Demonstrator+Programme/bb7367fc-fd2b-45e0-a1c4-e383460baf82>. Accessed 30/07/13.
- TED (Technology, Entertainment, Design) (2007) *Chris Bangle says that great cars are Art*. http://www.ted.com/talks/lang/eng/chris_bangle_says_great_cars_are_art.html. Accessed 22/03/11.
- Tesla Motors (2014) *Model S: Design Studio*.
http://www.teslamotors.com/en_GB/models/design. Accessed 02/04/14.

8. References

TfGM (Transport for Greater Manchester) (2013) *Greater Manchester Electric Vehicle Scheme*. <http://ev.tfgm.com/>. Accessed 01/08/13.

TfL (Transport for London) (2008) *Central London Congestion Charging: Impacts Monitoring, Sixth Annual Report*.
<https://www.tfl.gov.uk/cdn/static/cms/documents/central-london-congestion-charging-impacts-monitoring-sixth-annual-report.pdf>. Accessed 10/08/14.

The Charging Point (2011) *Ford's electric vehicles – the inside story*.
<http://www.thechargingpoint.com/2011/04/27/fords-electric-vehicles-the-inside-story/>. Accessed 05/05/11.

The Economic Times (2013) *Hybrids, electric vehicles in Tata Motors' plans until 2020*. <http://economictimes.indiatimes.com/news/news-by-industry/auto/automobiles/hybrids-electric-vehicles-in-tata-motors-plans-till-2020/articleshow/21245676.cms?curpg=2>. Accessed 23/07/13.

Thorold, P. (2003) *The Motoring Age: the Automobile and Britain 1896-1939*. Profile Books. London.

Thrift, N. (2004) Intensities of feeling: towards a spatial politics of affect. *Geografiska Annaler B* 86: 57-78.

Thrift, N. (2008) *Non-Representational Theory: Space, Politics, Affect*. Routledge. Abingdon.

Tomkins, S.S. (2008) *Affect, Imagery, Consciousness: the Complete Edition*. Springer Publishing Company. New York.

Top Gear (2011) *EV day trip part 1* <http://www.topgear.com/uk/videos/ev-day-trip-part-1-series-17-episode-6?VideoBrowserMode=tv-series&SeriesNumber=17>. Accessed 01/08/13.

8. References

- Toyota Europe (2013) *Global sales of Toyota hybrids exceed 5 million*.
http://www.toyota-europe.com/about/news_and_events/editorial/5-million-hybrids-sold.tmex . Accessed 18/11/13.
- Toyota Global (2013) *The 43rd Tokyo Motor Show 2013: Toyota FCV Concept*.
<http://www.toyota-global.com/tokyoms2013/fcv/>. Accessed 17/12/13.
- Toyota UK (2011a) *Introducing our hybrid family*. http://www.toyota.co.uk/cgi-bin/toyota/bv/generic_editorial.jsp?navRoot=toyota_1024_root&fullwidth=true&noLeftMenu=true&forceText=%3cnone%3e&edname=HybridFamily-landing&zone=Zone+News&id=HSD_Logo. Accessed 04/08/11.
- Toyota UK (2011b) *Toyota Yaris: Yaris vs Monster Truck*.
http://www.youtube.com/watch?v=VSM1BlnSVHw&list=PL72642EDA15C8D604&index=3&feature=plpp_video. Accessed 22/01/13.
- Toyota UK (2012) *Toyota Yaris Hybrid: Silence the City*.
http://www.youtube.com/watch?v=Nfu4IW1--iA&list=PL72642EDA15C8D604&index=14&feature=plpp_video. Accessed 22/01/13.
- Toyota UK (2013) *Toyota and BMW sign deal for new sports car*.
<http://blog.toyota.co.uk/toyota-and-bmw-sign-deal-for-new-sports-car>. Accessed 21/10/13.
- Toyota USA (2013) *RAV4 EV 2013. All Electric. All SUV*.
<http://www.toyota.com/rav4ev/#!/Welcome>. Accessed 28/07/13.
- Tranter, K. & Martin, D. (2013) 'The Cutting Edge of Cocking About': Top Gear, automobility and law. *Law and Humanities* 7(1): 1-18.
- Turrentine, T.S. & Kurani, K.S. (2007) Car buyers and fuel economy? *Energy Policy* 35(2): 1213-1223.

8. References

- UK Government (2014a) *Vehicle tax rate tables*. <https://www.gov.uk/vehicle-tax-rate-tables> . Accessed 27/05/14.
- UK Government (2014b) *Calculate tax on company cars*. <https://www.gov.uk/calculate-tax-on-company-cars>. Accessed 27/05/14.
- UN (United Nations) (2011) *Uniform provisions concerning the approval of vehicle with regard to the emission of pollutants according to engine fuel requirements*. <http://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/r083r4e.pdf> . Accessed 09/04/14.
- Urry, (2004) The 'system' of automobility. *Theory, Culture and Society* 21(4/5): 25-39.
- Urry, J. (2008) Climate change, travel and complex futures. *The British Journal of Sociology* 59(2): 261-279.
- van Mierlo, J., Maggetto, G. & Lataire, P. (2006) Which energy source for road transport in the future? A comparison of battery, hybrid and fuel cell vehicles. *Energy Conversion and Management* 47: 2748-2760.
- Vishnyakov, V.M. (2006) Proton exchange membrane fuel cells. *Vacuum* 80:1053-1065.
- Voelcker, J. (2013) *Electric cars sell faster than hybrids did at same point*. http://www.greencarreports.com/news/1085724_electric-cars-sell-faster-than-hybrids-did-at-same-point. Accessed 03/08/13.
- Wackernagel, M. & Rees, W. (1996) *Our Ecological Footprint: Reducing human Impact on Earth*. New Society Publishers. Gabriola Island.
- Waitt, G. & Harada, T. (2012) Driving, cities and changing climates. *Urban Studies* 49(15): 3307-3325.

8. References

- Warwick University (2013) Low Carbon Vehicle Technology Project (LCVTP).
<http://www2.warwick.ac.uk/fac/sci/wmg/research/lcvtp/>. Accessed 24/07/13.
- WCED (World Commission for Environmental Development) (1987) *Our Common Future*. Oxford University Press. Oxford.
- Wells, P.E. (2010) *The Automotive Industry in an Era of Eco-Austerity: Creating an Industry as if the Planet Mattered*. Edward Elgar Publishing Ltd. Cheltenham.
- Wetherell, M. (2012) *Affect and Emotion: A New Social Understanding*. Sage Publications Ltd. London.
- Widmer, E.L. (2002) Crossroads: the automobile, rock and roll and democracy. In Wollen, P. & Kerr, J. (Eds.) *Autopia: Cars and Culture*. Reaktion Books. London. pp 65-74.
- Williams, J. (2005) *Understanding Poststructuralism*. Acumen Publishing Ltd. Stocksfield.
- Wollen, P. (2002) Introduction: cars and culture. In Wollen, P. & Kerr, J. (Eds.) *Autopia: Cars and Culture*. Reaktion Books. London. pp 21-24.
- Zierer, C.M. (1922) Geography and the automobile. *The Journal of Geography* 21: 190-198.

9. Appendices**Appendix 1****How do we go from here? Online questionnaire**

Q.1 Please confirm that you have read and understood the participant information before participating with the survey.	
Yes, I have read the information and would like to proceed.	

Section 1 – About your car

Q.2 Are you a car owner?	
Yes	No (<i>goes direct to Q.7</i>)

Q.3 What kind of car do you have?	
Make (e.g. Ford)	
Model (e.g. Fiesta)	
Engine & trim (e.g. 1.4 Style)	
Petrol or diesel?	
Year (e.g. 02, 56)	
New or used?	

Q.4 How many miles do you typically drive per year? (indicate as applicable)	
Up to 5,000	
5,001-10,000	
10,001-15,000	
15,001-20,000	
20,001-25,000	
More than 25,000	

Q.5 How often during a typical month do you use your car for...? (indicate as applicable)							
	Daily	More than once a week	Weekly	Fort-nightly	Monthly	Less often	Never
Commuting							
Shopping							
Other domestic use (e.g. school run)							
Leisure							
Any trip of 50 miles & over							

Q.6 How many cars are there in your household?	
---	--

Q.7 Does your household have access to off-road parking?	Yes	No
---	-----	----

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Q.8 From where do you derive your own knowledge and/or opinion about cars? (indicate one or more as applicable)	
Newspaper articles (including supplements)	
Car magazines	
TV programmes	
Advertising – print (e.g. newspapers, magazines)	
Advertising – TV	
Advertising – billboard	
Internet	
Word of mouth	

Q.9 On a scale of 1 (not important) to 5 (very important), how important to you are the following factors when buying a new car?					
	<i>Not important</i>	<i>Not very important</i>	<i>Neither important or unimportant</i>	<i>Important</i>	<i>Very important</i>
Purchase cost					
Fuel economy					
Make/brand					
Type (e.g. saloon, hatchback)					
Previous make/brand experience					
Handling/steering					
Practicality					
Comfort					
Style					
Image					
Safety					
Reliability					
Official CO ₂ /km emissions					
Dealer proximity					

Q.10 Complete the following statements: I see the car as a... (indicate as appropriate)					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
luxury					
necessity					
status symbol					
sign of identity					
cultural object					
way to get from A to B					

Section 2 – About low carbon motoring

Q.11 As a means to mitigate the environmental impact of the car, there is a policy shift towards Alternatively Fuelled Vehicles (AFVs), which include hybrid cars, electric cars, and those powered by biodiesel or hydrogen. On a scale from 1 (nothing) to 5 (a lot), how much knowledge do you have about this debate with regard to... (indicate as appropriate)					
	1	2	3	4	5
Petrol/diesel cars					
Biodiesel cars					
Hybrid cars					
Range extended/plug-in hybrid electric cars					
Electric cars					
Hydrogen fuel cell cars					

Q.12 Have you ever driven a...? (indicate as appropriate)		
	Yes	No
Biodiesel car		
Hybrid car		
Electric car		
Hydrogen car		

Q.13 In the future, would you consider buying a...? (indicate as appropriate)				
	Would definitely consider	Would possibly consider	Would never consider	Don't know
Biodiesel car				
Hybrid car				
Range extended/plug-in hybrid electric car				
Electric car				
Hydrogen fuel cell car				

Q.14 What would encourage you to consider an electric car? (indicate one or more as applicable)	
Lower purchase price	
Greater fiscal incentives	
Rising petrol/diesel costs	
Longer battery range	
Shorter re-charging time	
Greater re-charging infrastructure	
Greater choice of electric cars	
Availability of electric cars	
Previous experience of electric cars	
More information about electric cars	
Attractive image	
Make/brand of electric car	
Nothing	

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Q.15 On a scale of 1 (not important) to 5 (very important), how important to you is consideration for the environment in influencing...?					
	<i>Not important</i>	<i>Not very important</i>	<i>Neither important or unimportant</i>	<i>Important</i>	<i>Very important</i>
Car purchase					
Style of driving					
Mode of domestic travel (e.g. car, cycle, bus, train)					
Other travel choices (e.g. short breaks, holidays)					

Section 3 – About you

Q.16 Are you....	Male	Female
-------------------------	------	--------

Q.17 Are you....	17-24	25-34
	35-44	45-54
	55-64	65+

Q.18 How would you describe your occupation?
<i>ONS categories to be inserted</i>

Q.19 In which council department do you work?	
--	--

Q.20 What is the <i>first half</i> of your postcode (e.g. CV1)?	
--	--

Q.21 How do you usually travel into work? (indicate one or more as applicable)	
Walk	
Cycle	
Bus	
Train	
Taxi	
Private car as driver	
Private car as passenger	

Q.22 Which newspaper(s) do you read...? (if none, state 'none' as applicable)	
Daily?	
Sunday?	
Locally?	

Q.23 Would you be <i>interested in participating</i> in a focus group discussion about the cultural and social aspects of the car? (confidentiality will be maintained – <i>no commitment necessary at this stage</i>)	Yes	No
Q.24 If so, please provide a contact work e-mail address		

9. Appendices

Q.25 Would you be <i>interested in participating in a one-to-one</i> interview about your experiences in your car? (confidentiality will be maintained – <i>no commitment necessary at this stage</i>)	Yes	No
Q.26 If so, please provide a contact work e-mail address		

**Thank you for your time and help in completing this questionnaire.
Please be assured that all the information you have provided will be treated in the
strictest confidence and will remain anonymous.**

Appendix 2
Respondent semi-structured interview questions

1. Why did you choose a ***?**

2a. What aspects do you like about your ***?**

2b. Which aspect do you like most about your ***?**

3a. What aspects do you dislike about your ***?**

3b. Which aspect do you dislike most about your ***?**

4a. Generally, what do you think that a *** says you are/about you?**

4b. Generally, what do you think that a *** says you are not?**

5a. Specifically, what do you think that your *** says you are/about you?**

5b. Specifically, what do you think that your *** says you are not?**

6a. Do you think that your car is a true reflection of you? Why?

7a. Have you noticed any reactions to your car from other people?

7b. What were they? How did they make you feel?

8a. What do you think that you say about your ***?**

9a. What does your car give to/provide for you?

9b. What would you miss most about not having your car?

10. Do you think that practical considerations impacted upon your choice of car? What were they?

11. Do you think that cost considerations impacted upon your choice of car? What were they?

12. Do you think that environmental considerations impacted upon your choice of car? What were they?

13. Do you think that cultural influences (music/film/TV/advertising) impacted upon your choice of car? What were they?

14. Would you say that you are able to identify different makes/models of car? To what degree?

15. What is your car history?

15b. Would you say that they were representative or rational? Why?

16a. Thinking back to acquiring your car – what did you first think about your car when you saw it/got it?

16b. Thinking back to acquiring your car – what did you first feel about your car when you saw it/got it?

17a. What do you think whenever you see/approach your car?

17b. What do you feel whenever you see/approach your car?

18a. What do you think when you're behind the wheel of your car?

18b. What do you feel like when you're behind the wheel of your car?

19. Do you think about the noises from your car while you're driving? What do you notice? Why?

20. Do you think about the feeling of the gearchange/steering/brakes while you're driving? What do you notice? Why?

21. Do you wish that your car was easier/quieter to drive? Why?

22. Do you wish your car was more/less involving to drive? Why?

23a. What do you listen to when driving your car? (e.g. radio/CD/MP3)

23b. Do you think that music/what you listen to has an effect on your driving? How?

24a. Why/what is the meaning of what you have done/added to the interior of your car?

24b. Why/what is the meaning of what you have done/added to the exterior of your car?

25. What/how does your car make you feel? Why?

26. Overall, does your car make you feel sadness, joy or nothing? Why?

27a. Would you say that you own a car out of necessity or desire?

27b. Have you always/long aspired to own a car? Why?

28a. What do you think about the idea of environmentally friendly cars?

28b. What would you class as an environmentally friendly car?

28c. What do you think about the idea of owning and driving an environmentally friendly car?

28d. What would you think upon seeing someone driving an environmentally friendly car?

29a. Tell me what you know about hybrid cars.

29b. Tell me what you know about electric cars.

30a. Do you know what government incentives are available to try and encourage you to buy an environmentally friendly or low carbon car?

30b. What do you know about the government's low carbon vehicle policy?

31a. Do you think that your experience of driving would be different in an electric car?

31b. How would you perceive it to be in comparison to your ***?**

32a. Would you have an EV version of your car? Why?

32b. Do you think that you would feel differently about the car/your car if it was electric? Why?

33a. What would you say are the attributes that the wider cultural/media influences suggest that ‘the best car’ has? (e.g. fast, eco, sporty, comfortable, safe)

33b. To you, what attribute(s) would ‘the best car’ have? (e.g. fast, eco, sporty, comfortable, safe)

34. What would you find more attractive/aspirational in a car – going fast or going green? Why?

35a. If you could have any car to suit your current needs, what would you choose?

35b. If you could have any car at all, what would you choose?

36. Any other questions?

Appendix 3
Focus group fun quiz

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<p><u>Film & TV cars</u> 1 point each for</p> <ul style="list-style-type: none">• Make of car• Model of car• Film/TV programme	1	/30
---	---	-----

Appendix 4
Focus group question schedule

What cars do you all drive?

What idea or notion defines the motor car or automobile e.g. freedom, status, utility?

What qualities do you think are desirable or attractive about the motor car or automobile?

How do you think that different types of car give out different messages about values, lifestyles, practices? Examples?

Do you think that the car is simply a mode of transport, or can it be seen as something more/a **cultural artefact**? Why? Give examples.

What cars do you recall from films/tv/music/books?

What cultural sources do you think might influence people's opinion on cars?

Do you think that your opinion about a car has ever been influenced by a cultural source?

In what way do you think the presentation of the motor car in films/television programmes influences how people regard it? Give examples.

Aside from product-specific messages, in what way do you think the presentation of the motor car in advertising influences how people regard it? Give examples.

Which advertisements/films/television programmes do you think have been influential in influencing opinion on:

- the motor car or automobile in general?
- particular makes/models of cars?

Have you noticed any environmental message(s) from any recent car adverts?

Do you think that we are culturally ready to accept low carbon vehicles – e.g. hybrid cars, electric cars?

Having seen back-to-back commercials for ICEs and LCVs, how can we make the leap?

YouTube adverts

Make notes as to what you see/hear/perceive in commercials

What visual & sound prompts did you notice in the commercial?

What did you think was the overall tone/message of the commercial?

What one-word adjective(s) would you use to describe the *** as a result of the commercial?

Having viewed adverts for both ICEs and LCVs what are the differences in how they're promoted?

What visual and sound prompts did you notice in the commercial for...?

Nissan Juke

Renault Megane

BMW 1-series

Toyota Yaris

What did you think was the overall tone/message of the commercial for...?

Nissan Juke

Renault Megane

BMW 1-series

Toyota Yaris

As a result of the commercial, what one-word adjective would you use to describe the...?

Nissan Juke

Renault Megane

BMW 1-series

Toyota Yaris

What visual and sound prompts did you notice in the commercial for...?

Nissan Leaf

Renault ZE

BMW i

Toyota Yaris Hybrid

What did you think was the overall tone/message of the commercial for...?

Nissan Leaf

Renault ZE

BMW i

Toyota Yaris Hybrid

As a result of the commercial, what one-word adjective would you use to describe the...?

Nissan Leaf

Renault ZE

BMW i

Toyota Yaris Hybrid

Appendix 5
Stakeholder interview questions – Manufacturers

Q1. What is **'s attitude to low carbon vehicles?**

Q2. How does **'s approach/range of models facilitate low carbon automobility?**

Q3. What would you say is the main driver for ** to encourage the take-up of low carbon vehicles?**

Q4. What of other drivers for ** to encourage a take-up of low carbon vehicles?**
Economic/fiscal?

Environmental?

EU/UK government policy?

Public demand?

**Q5. What response to low carbon vehicles have you garnered from:
The public?**

Business?

Local authorities?

The media?

**Q6. What does this tell you about the appetite for low carbon vehicles:
Generally?**

Your own products?

**Q7. What difference do you think will be made by low carbon vehicles with regard to:
Costs?**

The environment?

Society/general public?

Q8. What are your views on low carbon vehicle policy initiatives?

Q9. Do low carbon vehicle policy initiatives go far enough? Do they go too far?

Q10. Can low carbon vehicle policy initiatives be improved and, if so, how? What would you like to see?

Q11. For how long should low carbon vehicle policy initiatives be implemented?

Q12 Which low carbon vehicle technologies are ** planning to pursue?**

Q13. What are the prospects for low carbon vehicle technology? Which technology or technologies?

Q14. How do you think cost issues will impact upon the uptake of low carbon vehicles?

Q15. How do you think environmental issues will impact upon the uptake of low carbon vehicles?

Q16. How do you think mobility issues will impact upon the uptake of low carbon vehicles?

Q17. How do you think sociological and/or cultural issues will impact upon the uptake of low carbon vehicles?

Q.18 Do you think that the notion of ‘going green’ in our cars is, or ever will be, as attractive as ‘going fast’ in our cars? Why?

Appendix 6

Stakeholder interview questions – Infrastructure/authorities/policymakers

Q1. What is **'s attitude to low carbon vehicles?**

Q2. What are ** doing to encourage the uptake of low carbon vehicles?**

Q3. What would you say is the main driver for ** to encourage the take-up of low carbon vehicles?**

Q4. What of other drivers for ** to encourage a take-up of low carbon vehicles?**
Economic/fiscal?

Environmental?

EU/UK government policy?

Public demand?

**Q5. What response to low carbon vehicles have you garnered from:
The public?**

Business?

Local authorities?

The media?

Q6. What does this tell you about the appetite for low carbon vehicles generally?

**Q7. What difference do you think will be made by low carbon vehicles with regard to:
Costs?**

The environment?

Society?

Q8. What are your views on low carbon vehicle policy initiatives?

Q9. Do low carbon vehicle policy initiatives go far enough? Do they go too far?

Q10. Can low carbon vehicle policy initiatives be improved and, if so, how? What would you like to see?

Q11. For how long should low carbon vehicle policy initiatives be implemented?

Q12. What are the prospects for low carbon vehicle technology? Which technology or technologies?

Q13. How do you think cost issues will impact upon the uptake of low carbon vehicles?

Q14. How do you think environmental issues will impact upon the uptake of low carbon vehicles?

Q15. How do you think mobility issues will impact upon the uptake of low carbon vehicles?

Q16. How do you think sociological and/or cultural issues will impact upon the uptake of low carbon vehicles?

Appendix 7

Stakeholder interview question schedule – CABLED drivers

Q.1 What vehicle(s) did you drive in the trial?

Q.2 What did you think of the ** you drove in the trial?**

Q.3 What did you like the most about driving it/an electric car?

Q.4 What did you like the least about driving it/an electric car?

Q.5 Describe the experience and sensations of driving an electric car.

Q.6 Describe the positives & practicalities of driving an electric car.

Q.7 Describe the negatives & impracticalities of driving an electric car.

Q.8 How did the driving experience an electric car compare to a petrol/diesel car?

Q.9 What or how did driving an electric car make you feel?

Q.10 How does this compare to a petrol/diesel car?

Q.11 How do you regard the motor car or automobile as an everyday tool?

Q.12 How do you regard the motor car or automobile as a cultural object?

Q.13 Do you think that, ultimately, the motor car or automobile brings sadness or joy? Why?

Q.14 What do you think of the environmental impact of the motor car or automobile?

Q.15 Having experienced both an electric car and a petrol/diesel car, which do you prefer? Why?

Q.16 What tipping point or other reason would prompt or encourage you to buy an electric car or other low carbon vehicle?

**Q.17 Has driving an electric car changed the way you feel about the car generally?
How?**

**Q.18 Having experienced both an electric car and a petrol/diesel car, do you think
people will be able to change to an electric car or other low carbon vehicle? Why?**

Appendix 8
Ethical approval emails

Ethics <omis@coventry.ac.uk>

Thu 24/11/2011 09:07

Inbox

To:

...



The following ethics request has been approved by Nigel Berkeley. Please proceed with good ethics.

Ref:	P2414
Project Title:	How do we go from here? The consumption of the car and the pursuit of a low carbon automobility.
Applicant:	Jonathan Kershaw

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Ethics <omis@coventry.ac.uk>

Tue 01/05/2012 17:08

Inbox

To:

...



The following ethics request has been approved by David Jarvis. Please proceed with good ethics.

Ref:	P4823
Project Title:	How do we go from here? The consumption of the car and the pursuit of a low carbon automobility
Applicant:	Jonathan Kershaw
Module Code:	

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Ethics <omis@coventry.ac.uk>

Tue 07/08/2012 14:40

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To:

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The following ethics request has been approved by Nigel Berkeley.

Ref:	P5929
Project Title:	How do we go from here? The consumption of the car and the pursuit of a low carbon automobility
Applicant:	Jonathan Kershaw
Supervisor:	Nigel Berkeley
Module Code:	
Module Leader:	

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